ISMAAAA Roma, 2-6 July 2018

25TH INTERNATIONAL SYMPOSIUM ON METASTABLE, AMORPHOUS AND NANOSTRUCTURED MATERIALS



Welcome

Dear Colleagues,

On behalf of the Steering Committee, it is our great pleasure to welcome you to Rome on July $2^{nd} - 6^{th}$ 2018 for the 25^{th} International Symposium on Metastable, Amorphous and Nanostructured Materials (ISMANAM2018).

ISMANAM is an annual highly cross-disciplinary forum aimed at promoting scientific and technological discussions on nanostructured metals and alloys, ceramic and rapidly quenched glasses, porous materials, quasicrystals, polymers and other materials. The last advancements in synthesis methods, high-level characterization approaches and technological application will be discussed among scientists and engineers from all over the world. The ISMANAM conference series started in 1994, when the 1st Symposium organized by Prof. A.R. Yavari was held in Grenoble (France). The first event was followed by the subsequent symposia organized in Quebec (1995), Rome (1996), Sitges (1997), Wollongong (1998), Dresden (1999), Oxford (2000), Ann Arbor (2001), Seoul (2002), Foz do Iguaçu (2003), Sendai (2004), Paris (2005), Warsaw (2006), Corfu Island (2007), Buenos Aires (2008), Beijing (2009), Zürich (2010), Gijón (2011), Moscow (2012), Turin (2013), Cancún (2014), Paris (2015), Nara (2016) and San Sebastan (2017).

ISMANAM2018 is organized in 4 daily parallel sessions, including Plenary Talks, Keynote Speeches, Invited Talks, oral presentations and 4 poster sessions. The program will cover a wide range of topic as in the tradition of ISMANAM meetings: from metallic glasses and special alloys to nanostructured, metastable and porous materials with extensive variety of applications. Advanced processing techniques as well as phase transformations and mechanic properties will be extensively discussed. Some emphasis will be also given on magnetic and transport properties and materials for renewable energy. Finally, with the idea to open ISMANAM topics also to scientist coming from other research areas, an Outreach Keynote speech is proposed.

ISMANAM 2018 is held at the *Frentani Convention Centre*, in Rome, Italy, one of the most beautiful cities in the world, famous for its unique antiquities of the Roman empire, spectacular masterpieces of baroque art, grandiose squares and old charming neighbourhoods, as well as for its precious Museums and wonderful galleries.

On behalf of the Management Committee of ISMANAM 2018, we wish all participants a fruitful and enjoyable stay in Rome.

Davide Peddis, Sara Laureti, Gaspare Varvaro

ISMANAM 2018 General Chairs

Vande Mestin Sona Laureh Jespallane



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GENERAL INFORMATION

VENUE

The Conference will be held at the <u>FRENTANI CONVENTION CENTER</u>, located in the centre of Rome, 5-minute walking distance to Roma Termini train station and to the metro lines, allowing an easy connection to the Rome main attractions.

The whole center is air-conditioned, and 4 multifunctional and flexible rooms are equipped with top level audiovisual devices (plasma screens, projectors, embedded screens, teleconference, videoconference, etc.). A free Wi-Fi connection will be offered for all the participants. Coffee-breaks and buffet lunches will be served in the *Frentani RistorArte Hall*.





FRENTANI CENTRO CONGRESSI







Frentani Convention Center Via dei Frentani, 4 00185 Roma info@congressifrentani.it

http://www.congressifrentani.it/

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REGISTRATION

All ISMANAM 2018 attendees already registered are invited to complete the check-in at the pre-registration desk, where the conference material will be given. On-site registrations during the Conference will be at the late rates listed below. Onsite payments are possible by credit card or cash (no check will be accepted).

700€ (regular) 430€ (student) 245€ (companion)

Please, note that ISMANAM 2018 is supported by Science is Cool – SCOOL (http:// www.scienceiscool.it/), a non-profit Cultural Association promoting educational activities and scientific events aimed at engaging, at different levels, people with science. In order to facilitate a large participation at ISMANAM2018, a **VAT-free registration fee** will be offered **for SCOOL membership** (subscription fee $2 \in$, to be paid by cash), according to the list below:

570€ (regular - SCOOL member) 350€ (student- SCOOL member) 200€ (companion - SCOOL member)

REGISTRATION DESH

The Registration Desk will be located at -2 floor. It will be open during the following hours:

Monday, July 2: 8:00 am – 6:00 am Tuesday, July 3: 8:00 am – 6:00 pm Wednesday, July 4: 8:00 am – 6:00 pm Thursday, July 5: 8:30 am – 6:00 pm Friday, July 6: 8:30 am – 2:00 pm

BADGE POLICY

When you check in at the Registration Desk, you will receive a personalized name badge. It enables you to access all Conference areas. All attendees and companions will be required to wear their name badges to enter the Conference area.

INTERNET ACCESS

Wireless access will be available in the Conference area (Wi-Fi access code: ccfrentani). The speed of connection serves basic purposes, such as emailing, and may be limited due to the high number of expected attendees.

ORAL PRESENTATION

All the oral presentations will be given in English. Speakers have been allocated the following time slots:

- Plenary Speakers 60 minutes total: 50 minutes for presentation and 10 minutes for discussion.
- *Keynote Speakers* 45 minutes total: 40 minutes for presentation and 5 minutes for discussion.
- Invited Speakers 30 minutes total: 25 minutes for presentation and 5 minutes for discussion.
- *Contributed Talks* 15 minutes total: 13 minutes for presentation and 2 minutes for discussion.

All the authors presenting a talk are kindly requested to show up at least 30 minutes in advance the beginning of their oral session.

A PC with technical assistance will be available in the Conference room to transfer and check the presentation.

Please, name the file with your SURNAME. Power Point and pdf formats will be accepted.

POSTER PRESENTATION GUIDELINES

The poster size must not exceed 120 X 70 cm; dedicated tape to fix the posters will be given by the staff. Although the poster sessions are scheduled in the afternoon, presenting authors are strongly encouraged to fix their poster early in the morning and to properly attend the poster session in order to favour the results dissemination and to participate to the Best Poster Award competition.

AWARDS

As is the tradition of the ISMANAM Symposium, the annual *ISMANAM Prizes* will be awarded during the Symposium dinner.

- Senior Scientist Award. It recognizes the outstanding contributions of a distinguished researcher active in any of the topics covered by the Symposium.
- Young Scientist Award. It recognizes the promising contributions of a Symposium participant not older than 35 years of age, with an excellent track record within the topics covered by the Symposium.
- Outstanding Student Poster Award. It will be assigned to the best poster contribution presented during the conference (sponsored by Associazione Italiana di Magnetismo - AiMagn). The poster will be selected on the basis of the technical content, graphical aspect and presentation quality.

The potential candidates must be registered at the ISMANAM 2018 and should send (by themselves or proposed by any participant) a short CV including the most relevant aspects related to the ISMANAM Conference and its topics (articles, talks, etc.) to info.ismanam2018@ism.cnr.it.

Moreover, one additional award will be assigned during the closing ceremony:

 Outstanding "Magnetism" Award. It will be assigned to the best contribution (oral or poster) in the field of magnetism presented during the conferences (sponsored by Associazione Italiana di Magnetismo, AiMagn).

PROCEEDINGS

Conference Proceedings will be published on the following journals

Journal of Alloys and Compounds

Selected papers presented at the conference will be published in Journal of Alloys and Compounds, after a rigorous peer review process.

The deadline for submitting manuscripts is September 30th, 2018.

Solid State Phenomena

All the participants are invited to submit the papers presented at the conference to Solid State Phenomena (Scientific.Net is a registered brand of Trans Tech Publications Inc.). Manuscripts should be submitted using the regular submission page of Solid State Phenomena and will be refereed using the standard procedures of the journal. Upon acceptance, papers will be published online.

The deadline for the manuscript submissions is September 30th, 2018.

Journal of Nanoscience and Nanotechnology

A special issue of JNN will be devoted to ISMANAM2018 Proceedings; expert investigators in specific research frontiers regarding the various aspects of synthesis/characterization/functional applications of nanostructured materials are invited to submit their paper.

The deadline for the manuscript submissions is October 31st, 2018.



Committees

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Secretary: M. Piergentili (SCOOL), A. Serangeli, L Nanni (ISM-CNR)

Support to the staff is given by the high scool students from the Istituto Istruzione Superiore Gregorio da Catino (RI), Italy in the framework of the Alternanza Scuola Lavoro agreement (Teachers: E. Catone, T. Concina).

Techincal Support (INDICO, webmaster and

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PROGRAMME AT GLANCE



PROGRAMME PLENARY LECTURES

Jürgen Eckert - Austrian Academy of Science & Montanuniversitat Leoben, Austria Structure modulation and nanocrystallization of metallic glasses: how to tune mechanical properties. [Monday 2 July, 10:00 am, Auditorium]

Abstract. Metallic glasses are known for their outstanding mechanical strength but limited plasticity. Significant progress has been made in recent years in how to optimize processing conditions for bulk glass formation, net-shape forming and the microscopic mechanism of failure. However, the details of the correlation between atomic structure, defects and thermo-mechanical treatments utilized for structure modification and their impact on shear band nucleation and propagation for achieving macroscopic ductility are still not well-understood.

This talk attempts to shed light on structural (re)ordering, recovery and rejuvenation mechanisms, as well as nanocrystallization phenomena in different metallic glasses when they are subjected to different casting conditions, relaxation or thermoplastic net-shaping. The findings will be discussed with respect to shortand medium-range order modulation, defect generation and annihilation, and precipitation of secondary phases. The structural changes will be correlated with changes in plastic deformability and failure mechanisms, and the effectiveness of composition tuning and thermo-mechanical processing for plasticity improvement will be analyzed in order to derive design aspects and processing guidelines for property optimization of metallic glasses.

Jürgen Eckert is Director of the Erich Schmid Institute (ESI) of Materials Science of the Aus-



trian Academy of Sciences and Head of the Department Materials Physics at Montanuniversität Leoben, Austria. Before (2006 to 2015) he was Director of the Institute for Complex Materials at the Leibniz-Institute for Solid State and Materials Research Dresden (IFW Dresden) and Full Professor at Dresden University of Technology, Germany.

Earlier in his career, he was Full Professor at Darmstadt University of Technology, Germany (2003 to 2006), and before held positions at IFW Dresden, industry and in the United States at California Institute of Technology. He studied Materials Science at the University of Erlangen-Nuremberg, Germany and received his PhD from the same University. His major research areas are materials physics, metastable materials, structure and property correlations and structural and physical properties of advanced materials. Jürgen Eckert is a corresponding Member of the Austrian Academy of Sciences, a Member of the Europe-

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an Academy of Sciences, and Fellow of the Materials Research Society (MRS). He received the Gottfried Wilhelm Leibniz Award of the German Research Foundation, the DGM Prize of the Deutsche Gesellschaft für Materialkunde (DGM), an ERC-Advanced Grant of the European Research Council, the ISMANAM Senior Scientist Award, the Hsun Lee Lecture Award of the Chinese Academy of Sciences, the DGM Georg-Sachs-Prize, and the FEMS Materials Science. He is coauthor of more than 1100 scientific papers and has presented numerous invited and plenary talks at international conferences. In addition, he holds more than 20 patents in the areas of materials science and processing technology.

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Michael Farle - Universitat Duisburg-Essen, Germany

Smart magnetism: nanomaterials design for friction less transport, refrigeration and theranostics.

[Tuesday 3 July, 8:45 am, Auditorium]

Abstract. Magnets are key components of energy-related technologies, such as direct drive wind turbines, e-mobility and magnetic refrigeration. They are also important in robotics and automatisation, sensors, actuators, and information technology. Additive manufacturing (AM) as well as controlled phase-decomposition of complex alloys are promising pathways to design magnetic materials with properties tailored to specific applications. Such novel approaches require the use of functionalized nanomagnets at length scales between few nanometers and several micrometers

Starting with a discussion of basic concepts of magnetic properties with a focus on how to tune parameters in a nanomagnet, I will highlight selected state-of-theart experimental approaches that allow us to experimentally analyze multifunctional particles with single particle or even atomic precision. The apparently complex behavior of hybrid metal/metal, metal/oxide, or oxide/oxide interface materials – core-shell materials - can be understood from the three fundamental interactions in magnetism: magnetic exchange due to orbital overlap, spin-orbit interaction due to inner- and intra-atomic relativistic effects (e.g., crystal field effects) and the long-range magnetic dipolar interaction. Several examples will be presented, including the formation of above-room-temperature ferromagnetic interface layers between core/shell antiferromagnetic shells, the design of a macroscopic magnet with a monopole-like magnetic response and the first magnonic dispersion measured in single magnetotactic bacteria.

Michael Farle received his Diploma in experimental physics, Doctorate, and Habilitation degrees from Freie Universität Berlin in 1984, 1989, and 1998, respectively. During this



time he spent three and a half years as a senior researcher at Stanford University, California, and Université de Strasbourg, France. In 1999, he moved to Technische Universität Braunschweig, Germany, where he became a full professor. Since 2002, he has been working as a professor at the Universität Duisburg-Essen, Germany, where he also served as Vice-Rector for Research and Junior Scientific Staff.

He coordinated two European Research Networks and served as the vice-spokesman of the Collaborative Research Center: Magnetic Heterostructures (SFB 491). 2014-2017 he was the chairman of the Magnetism Section of the German Physical Society. For many years he has been active on the program committees of several international conferences on magnetism. He is a Distinguished Lecturer 2017 of the IEEE Magnetics Society, and a member of the German Physical Society.

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Paul Voyles - University of Wisconsin, USA

Heterogeneous dynamics of metallic glass-forming liquids. [Wednesday 4 July, 8:45 am, Auditorium]

Abstract. Glasses are complex materials. They exist in a variety of metastable states with different enthalpies, with a wide variety of local atomic arrangements, and those atoms rearrange at different rates in different places. Much of this complexity occurs at the nanoscale, including medium-range structural order and spatially heterogeneous dynamics in the supercooled liquid near T_a. Electron nanodiffraction is well-suited to probing this key length scale. Electron correlation microscopy (ECM) is the study of temporal fluctuations in nanodiffraction, are sensitive to structural rearrangements in the supercooled liquid. The time-time autocorrelation function of the diffracted intensity can be fit to a stretched exponential, $g_2(t) = 1 + Aexp[-2(t/\tau)\beta]$ to obtain the structural relaxation time τ and stretching exponent β , both with sub-nanometer spatially resolution. A four-point two-time, two-space correlation function can be fit to obtain a characteristic length ξ along with τ . We have used ECM to study the dynamics in the supercooled liquid region of Pt₅₇₅Cu₁₄₇Ni₅₃P₂₂₅ nanowires from T_a (507 K) to T_a+ 16 K (523 K). The data constitute the first spatially-resolved images of spatially heterogeneous dynamics in a supercooled liquid. The characteristic time scale τ varies from >500 seconds to a few seconds, and the characteristic length scale ξ varies from 1.4 to 0.8 nm with increasing temperature. The viscosity calculated from the mean relaxation time is in good agreement with bulk viscosity measurements. $\xi(\tau)$ over this limited temperature range agrees with all of the major microscopic theories of the glass glass transition. The nanowires also exhibit a near-surface region with dynamics consistently an order of magnitude faster than the bulk. The thickness of the layer is ~0.7 nm, which is too thick to arise from a surface monolayer. Instead, it is similar to the length scale of cooperatively rearranging regions in the liquid, so we speculate that the fast dynamics arise from trajectories of those regions that sample the free surface. The fast dynamics of the surface region may influence the surface-driven crystallization of the wires and may be related to the suppressed T_a observed in nanoconfined liquids.



Paul Voyles is Professor and Chair of the Department of Materials Science and Engineering and Beckwith-Bascom Professor at the University of Wisconsin-Madison. He earned degrees in physics from Oberlin College and the University of Illinois, Urbana-Champaign, then worked as a post-doctoral member of technical staff at Bell Labs in Murray Hill NJ. He joined the UW-Madison in 2002 as an Assistant Professor. His research specialty is the structure of materials, investigated primarily with electron microscopy, supplemented by simulations and data science. He has worked on metallic and other glasses and on materials for microelectronics, spintronics, and superconductors. He co-leads the interdisciplinary research group Stability in Glasses in the UW-Madison NSF MRSEC. He has published over 150 journal articles, book chapters, and conference proceedings.

Vincenzo Palermo - ISOF-CNR, Italy

Self-assembly of carbon-based materials from nano- to macro-scale: when enemies become friends.

[Friday 6 July, 8:30 am, Auditorium]

Abstract. It takes more than good bricks to build a durable house. Likewise, it takes more than good molecules to build a good material: the molecular bricks should be correctly assembled in larger structures, then in mesoscopic phases, all the way up to the bulk material. In this talk, we will describe how we used covalent and non-covalent chemistry to assemble together a wide range of carbon-based building blocks such as small molecules, polymers, nanotubes and graphenes. Even if with different size and properties, they all share an extended conjugated structure, and can be functionalized and processed using covalent and supramolecular techniques, π - π interactions, hydrogen bonds, etc.In particular:

- Small poly-aromatic molecules (pyrenes, pentacenes, coronenes, polythiophenes, etc.), have a well-defined electronic bandgap and mono-dispersed nanometric size that allows their self-assembly in highly ordered stacks to give fibers, nano-crystals and uniform monolayers.
- Polymers have a much larger size, from few to hundreds of nm; they form more disordered assemblies, but their linear shape allows efficient processing, and transport of electric charges.
- Carbon nanotubes and graphene, reaching sizes up to tens of microns, have impressive optical, electronic and mechanical properties, but their processing and functionalization, as well as the control of their metallic/semiconducting properties, is still a major challenge.

We'll demonstrate that original results shall be achieved by combining together such materials with different shapes, obtaining nano-composites with novel properties and concrete applications in the fields of electronics, aerospace, energy storage or sensing.

Vincenzo Palermo is Research director at CNR in Italy and research professor at the Chalmers Uni-



versity in Sweden. He is the vice-director of the GRAPHENE FLAGSHIP project, involving >150 partners in 23 EU countries. He won the FEMS Lecturer Award for Excellence and the Research Award of the Italian Society of Chemistry (SCI). He has published for Hoepli two books on the life and science of Albert Einstein and of Isaac Newton.



PROGRAMME Heynote Lectures

Alfred Ludwig - Ruhr-University Bochum, Germany

Combinatorial and high-throughput methods for the investigation of novel materials. [Tuesday 3 July, 2:30 pm, Auditorium]

Abstract. The design of new materials is a key challenge in materials science: e.g. new nanostructured materials for the sustainable production/storage/conversion of energy carriers are necessary to improve existing and to enable future energy systems. Efficient methods for discovery and optimization of new materials are necessary. By implementing and optimizing the thin-film combinatorial materials science approach in our group for >10 years, we are trying to contribute to this development. It comprises the fabrication and processing of thin film materials libraries by combinatorial sputter deposition processes (40 elements available) and optional post-deposition treatments (e.g. thermal oxidation, annealing, dealloying), followed by the high-throughput characterization of the different thin film samples contained in these libraries. The importance of defining adequate screening parameters and the according design of different materials libraries suitable for one or more screening parameters will be addressed. Our high-throughput material characterization methods are automated, fast, and mostly non-destructive: examples are EDX and RBS for composition, XRD for crystal structure, temperature-dependent resistance for phase transformation, high-throughput test stands for optical properties (color, transmission) and mechanical properties (stress, hardness, elastic modulus), and scanning droplet cells for photoelectrochemical properties screening. The obtained results for up to quinary systems are visualized in the form of composition-processing-structure-function diagrams, interlinking compositional data with structural and functional properties. The talk will cover and discuss examples of the combinatorial development of nanoscale materials with a focus on the combinatorial synthesis of multinary nanoparticle libraries by combinatorial sputtering into ionic liquids. Further examples include nanoscale shape memory alloys, multiple principal element alloys and metal oxide thin film materials libraries for solar water splitting.

Chiara Maccato - Padova University, Italy

H₂ Photo-generation promoted by iron oxide nanoarchitectures prepared by CVD-Based approaches.

[Wednesday 4 July, 2:30 pm, Auditorium]

Abstract. The fossil fuels depletion and the concomitant pollution increase have boosted huge efforts devoted to the search of alternative and sustainable energy vectors. In this context, hydrogen represents an appealing alternative due to its high efficiency and clean combustion, but the development of environmental friendly H2 generation routes still represents an open issue. To this regard, solar-assisted hydrogen production from water solutions by photo-activated processes has received a great attention as an amenable way to convert sunlight into storable chemical energy. In particular, the design of active photocatalysts endowed with tailored structure, morphology and composition is of utmost importance to gain appealing functional performances.

Among the possible active materials, iron oxide-based systems and, in particular, Fe_2O_3 , stand as interesting photocatalyst thanks to their promising chemico-physical properties, encompassing low environmental impact, low cost, and favorable energy gap to harvest Visible light. Nevertheless, their performances are detrimentally affected by recombination losses, requiring the implementation of their structural, compositional and morphological properties in order to improve their functional behavior.

This contribution will provide a survey of recent studies conducted in our research group on photo-assisted H_2 generation by supported Fe_2O_3 -based nanosystems obtained by Chemical Vapor Deposition (CVD)-based approaches. In particular, tailoring of the system nano-organization, structure and composition will be critically discussed in relation to the following case studies:

i) anion-doped alpha- Fe_2O_3 , the most thermodynamically stable polymorph1; ii) beta and epsilon- Fe_2O_3 , two scarcely explored phases, used for the first time in the target application2;

iii) Fe_2O_3/TiO_2 nanocomposites, eventually functionalized with Au nanoparticles. The role of the interplay between synthesis parameters, chemico-physical properties and functional properties will also be discussed.

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Dieter Suess - Vienna University of Technology, Austria

Applications and potential of 3D printing: from polymers to magnetic solid state materials.

[Thursday 5 July, 2:30 pm, Auditorium]

Abstract. Within this talk I will give a review and status of 3d printing in various fields ranging from applications in gas turbines, to lenses for THz beam shaping and magnetic materials. A compilation of different additive manufacturing methods will be given with special focus on (i) fused deposition modeling (FDM) and (ii) selective laser melting (SLM) for additive manufacturing of magnets.

I will present that it is possible to produce NdFeB polymer bonded magnets with gradual change in magnetic properties, which is not possible to realize with any other method. Furthermore, I will present first results on aligning anisotropic ferrite particles during printing that could allow in the future to realize magnets with locally varying magnetization directions such as Halbach arrays or undulators.

In order to fully make use of these new production flexibility advanced algorithm are required to determine the shape of the printed structure such as mechanical parts or magnets to meet the requirements for applications. I will introduce the efficient Adjoint Method in order to solve the inverse field problem. As an example, I will present the fabrication of additive manufactured magnetic shimming elements to improve the homogeneity of a magnetic field. The simulation algorithm can find a suitable permanent and nonlinear soft magnetic design that fulfills the desired field properties.

I will conclude with an outlook how 3d printing may influence the design of functional materials and applications in the future.



Programme

INVITED LECTURES

Michael Atzmon - University of Michigan, Ann Arbor, MI, USA Atomistic details of ductility and structural relaxation from STZ spectra.

M. Baricco - Department of Chemistry and NIS, University of Turin, Turin, Italy Effect of non-equilibrium processing on the synthesis and thermoelectric properties of skutterudites and half Heusler compounds.

M.D. Baró - Departament de Física, Universitat Autònoma de Barcelona, Barcelona, Spain Tri-segmented magnetic nanowires with antiparallel alignment: suitable platforms for biomedical applications with minimized agglomeration?

G. Barrera - Nanoscience and Materials Division, INRIM, Turin, Italy Out-of-equilibrium cation distribution in ferrites: static and dynamic magnetic properties.

G. Barucca - Dipartimento SIMAU, Università Politecnica delle Marche, Ancona, Italy Comparing structural and mechanical properties of additive manufactured metallic parts after selected thermal treatments.

L. Battezzati - Dipart. di Chimica IFM, Università di Torino, Turin, Italy Rapid solidification of AlSi10Mg + Cu mixed powders by single track laser melting and melt spinning.

A. Calka - Faculty of Engineering and Information Sciences, University of Wollongong, Wollongong, Australia

Indirect assessment of sample temperature in plasma environment during electric discharge assisted mechanical milling.

S.A. Cavill - Department of Physics, University of York, York, UK

Enhanced magnetoelectric effect in m-type hexaferrites by Co substitution into trigonal bi-pyramidal sites.

V. Franco - Department of Condensed Matter Physics, Sevilla University, Sevilla, Spain Thermo-magnetic phase transitions and magnetocaloric materials.

L. Gavioli - Dipartimento di Matematica e Fisica, Università Cattolica del Sacro Cuore, Brescia, Italy Nanogranular materials obtained by gas phase synthesis: physical properties and multimodal multiscale metrology.

P.K. Gokuldoss - Department of Manufacturing and Civil Engineering, Norwegian University of Science and Technology, Gjøvik, Norway Alloy development for additive manufacturing processes.

A.L. Greer - Department of Materials Science & Metallurgy, University of Cambridge, UK Athermal changes in structure induced by thermal cycling of metallic glasses.

J.-M. Greneche - Institut des Molécules et Matériaux du Mans, UMR CNRS, France Magnetic Fe-based Nanoarchitectures.

S. Hosokawa - Department of Physics, Kumamoto University, Kumamoto, Japan A structural study of a rejuvenation effect in amorphous Gd-Co metal by anomalous x-ray scattering.

J. Huang - Institute for Advanced Study, City University of Hong Kong, Hong Kong, China Nanoindentationcreep response of FeCoNiCrMnAl high entropy alloys over 300 to 600 °C.

S. Kaloshkin - Center for composite materials, National University of Science and Technology "MISIS", Moscow, Russia New nanostructured composite materials with partially-carbonized elastomer matrix.

M. Kaufman - Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, CO, USA

Stable and metastable crystalline phases in the Al-Ge and Al-Ce-Mn systems: structural characterization and formation mechanisms.

K. Kelton - *Physics Department, Washington University, MO, USA* Origin of fragility and the onset of cooperative dynamics in liquids.

D. Louzguine - WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan High strength Ti-based alloys for structural and biological applications.

E. Ma - Whiting School of Engineering, Johns Hopkins University, Baltimore, MD Tailoring nanocrystallization to break the speed limit of phase-change memory.

S. Murshed - Department of Mechanical Engineering of the Instituto Superior Técnico under University of Lisbon, Portugal Nanofluids in energy systems: prospects and challenges.

S.B. Murty - Department of Metallurgical and Materials Engineering, IIT Madras, Chennai, India Stability and deformation behaviour of nanocrystalline high entropy alloys.

G. Muscas - Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden Artificial all-amorphous magnetic superstructures.

J. Nogues - ICREA and Catalan Institute of Nanoscience and Nanotechnology, Barcelona, Spain

Simultaneous local heating/thermometry based on plasmonic magnetochromic nanodomes.

P.S. Normile - Instituto Regional de Investigación Científica Aplicada (IRICA) and Departamento de Física Aplicada, Universidad de Castilla-La Mancha, Spain Demagnetizing field corrections and packing-fraction distribution in magnetic nanoparticle assemblies.

E.S. Park - Department of Materials Science and Engineering, Seoul National University,

Seoul, Korea Abnormal relaxation behavior via disordered clusters in glass forming liquid.

N. Pinna - Institut für Chemie, Humboldt-Universität zu Berlin, Berlin, Germany Reversible sodium and lithium insertion in iron fluorides.

T. Sarkar - Department of Engineering Sciences, Uppsala University, Uppsala, Sweden Tuneable single-phase magnetic behavior in chemically synthesized AFeO3-BF2O4 (A = Bi or La, B = Co or Ni) nanocomposites.

T. Spassov - Faculty of Chemistry and Pharmacy University of Sofia "St. Kl. Ohridski", Sofia, Bulgaria Microporous metals by De-alloying of glasses.

Y. Sun - Institute of Physics, Chinese Academy of Science, Beijing, China Real time determination of visco-plastic strain in metallic glasses via x-ray scattering.

E. Tamburri - Dipartimento di Scienze e Tecnologie Chimiche, Università degli Studi di Roma "Tor Vergata", Roma, Italy Nanodiamond/polymer composites: from materials design to 3D manufacturing.

T. Teranishi - Institute for Chemical Research, Kyoto University, Kyoto, Japan Pseudo-morphic transformation of nanocrystals by element replacement.

M. Venkata Kamalakar - Department of Physics and Astronomy, Uppsala University, Sweden

Advances in two-dimensional planar spintronics.

Z. Wang - National Engineering Research Center of Near-net-shape Forming for Metallic Materials, South China University of Technology, Guangzhou, China Ti-based metallic glasses reinforced AI alloy matrix composites.

A. Zhukov - Department of Materials Physics, UPV/EHU,San Sebastián, Spain Engineering of magnetic properties and GMI effect in Fe-rich magnetic microwires by stress annealing.

PROGRAMME Outreach Event

Luca Bindi - Firenze University, Italy

Once upon a time in Kamchatka: The extraordinary search for natural quasicrystals. [Monday 2 July, 2:30 pm, Auditorium]

Abstract. Quasicrystals are exotic materials with symmetries that were once thought to be impossible for matter. Over the last thirty years, more than one hundred examples have been identified, but, until now, all have been produced in the laboratory under controlled conditions ranging from rapid to moderately slow. Nevertheless, one could not be sure of their long-term stability because they could not be kept in equilibrium at low temperatures or annealed over eons. An interesting test would have been to see if Nature beat us to the punch. If quasicrystals are on the same footing as crystals, then it would be conceivable that quasicrystals formed under natural conditions and simply have not been noticed until now. The search to answer this guestion, culminated with the discovery in 2009 of the first natural icosahedral guasicrystal and in 2015 of the second guasicrystal with decagonal symmetry, took more than a dozen years and has opened a new frontier in mineralogy that could lead to new discoveries in geoscience, astronomy, condensed matter physics, and materials engineering. For the first time, minerals have been discovered that violate the symmetry restrictions of conventional crystallography. That nature could accomplish this without human intervention was unexpected, requiring the existence of petrological processes never considered previously. The fact that the quasicrystals were found in a meteorite formed in the earliest moments of the Solar system means these processes have been active for over 4.5 billion years and influenced the mineral composition of the first objects to condense around the Sun. Finding guasicrystals formed in these extreme environments informs the longstanding debate about the stability and robustness of guasicrystals among condensed matter physicists. Finally, the discovery inspires further searches for quasicrystals and other new forms of matter not seen in the laboratory previously, which may provide valuable new materials for physics and engineering.

This talk will describe the search for natural quasicrystals that took over a dozen years, resulting in one of the strangest scientific stories you are ever likely to hear.



PROGRAMME SHORT

SUNDAY 1 JULY

19⁰⁰ Welcome Party – Angelicum Centro Congressi – *Cloister,* Largo Angelicum, 1

MONDAY 2 July

08 00	Registration			
09 ³⁰	Conference Opening			
10 ⁰⁰	 PLENARY – Structure modulation and nanocrystallization of metallic glasses: how to tune mechanical properties. Jürgen Eckert, Austrian Academy of Science & Montanuniversitat Leoben, Austria Auditorium Chair: K. Kelton 			
11 ⁰⁰	Coffee Break			
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Metallic Glasses I Chair: M. Atzmon	Nanostructured Materials I Chair : E. Tamburri	Advanced Preparation and Processing Techniques I Chair : A. Calka	Crystallization processes I and Mechanical Properties I Chair : E.S. Park
11 ³⁰ 11 ⁴⁵	[ID-99] (Invited) Origin of fragility and the onset of cooperative dynamics in liquids. <i>K. Kelton</i>	[ID-423] (Invited) Stability and deformation behaviour of nanocrystalline high entropy alloys. <i>B.S. Murty</i>	[ID-382] (Invited) Rapid solidification of AISi ₁₀ Mg + Cu mixed powders by single track laser melting and melt spinning. L. Battezzati	[ID-52] (Invited) Tailoring nanocrystallization to break the speed limit of phase-change memory. <i>E. Ma</i>
12 ⁰⁰	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	[ID-100] Mechanical properties of nanostructured materials embedded with nanotwins. <i>N. Tao</i>	[ID-421] Al-Si-Ni-Cr-Fe alloy prepared by selective laser melting: microstructure mechanical properties. <i>G. Cattano</i>	[ID-332] Influence of citrate and other small dicarboxylic acids on hydroxyapatite nanocrystal nucleation, growth and surface properties. <i>L. Esposti</i>
12 ¹⁵	[ID-133] Nitrogen plasma immersion ion implantation treatment enhances the corrosion resistance, blood coagulation, and cell response of Zr-based bulk metallic glass for implant applications. <i>H. Huang</i>	[ID-128] Interface-modulated strengthening ability of nanoscale Cu/Au multilayers. <i>GP. Zhang</i>	[ID-422] Mechanical alloying and spark plasma sintering of nanostructured CuCrFeTiMn(Ni) high-entropy alloys. <i>N. Shkodich</i>	[ID-330] Controlling the Curie temperature in amorphous glass coated microwires by heat treatment. A. Dzhumazoda
12 ³⁰	[ID-152] Characterization of oxide layers developed on ZrCuAl-based bulk metallic glasses during gaseous thermochemical treatment. <i>S. Haratian</i>	[ID-174] Enhancing the wettability of nano-scale Cu thin film on ZnO substrate by gas additives: A density-functional study. <i>E. Choi</i>	[ID-385] Processes involved during nanostructured material production by pulsed laser ablation in liquid. <i>A. Santagata</i>	[ID-55] (Invited) Nano indentation creep response of FeCONICrMnAI high entropy alloys over 300 to 600 °C. J. Huang

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12 ⁴⁵	[ID-163] Atomic structure and devitrification of Ca-based metallic glasses. <i>K. Saksl</i>	[ID-41] Tribological and corrosion property of Fe-based metallic glass nanocomposite coatings synthesized by thermal spraying. <i>T. Laha</i>	[ID-149] Cooling strategies for droplet solidification of glass forming alloys. <i>N. Ciftci</i>	
13 ⁰⁰			$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	[ID-119] Creep testing of woven fabric flax-polypropylene composite using digital correlation image (DIC). <i>R.Z. Messadi</i>
13 ¹⁵	Lunch			
14 ³⁰	OUTREACH EVENT Luca Bindi, Firenze Univ <i>Auditorium</i> Chair: G. Andreozzi	versity, Italy		
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Metallic Glasses II Chair : J. Bhatt	Nanostructured Materials II Chair: B.S. Murthy	Advanced Preparation and Processing Techniques II Chair : A. Santagata	Crystallization processes II Chair: E. Ma
15 ³⁰	[ID-470] (Invited) Microporous metals by De-alloying of glasses. <i>T. Spassov</i>	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	[ID-453] (Invited) Nanodiamond /polymer composites: from materials design to 3D manufacturing. <i>E. Tamburri</i>	[ID-416] (Invited) Abnormal relaxation behavior via disordered clusters in glass forming liquid <i>ES. Park</i>
15 ⁴⁵		[ID-139] Abnormal grain growth mediated by fractal boundary migration at the nanoscale. <i>C. Braun</i>		
16 ⁰⁰	[ID-201] Glass formation adjacent to the intermetallic compounds in Cu-Zr binary system. Y. Wang	[ID-236] Phase evolution and thermal stability of mechanically alloyed AICoCrFeNiMn high entropy alloy. <i>V. Shivam</i>	[ID-24] (Invited) Alloy development for additive manufacturing processes. <i>P.K. Gokuldoss</i>	[ID-449] How to describe atomic arrangements of disordered structures. <i>K. Nishio</i>
16 ¹⁵	[ID-284] A novel micro-casting process for mass production of metallic glasses microparts. <i>S. Gravier</i>	[ID-222] Development of shape memory NiTi-based nanoparticles. <i>JY. Kim</i>		[ID-305] Structural characterization of amorphous FeZr by EXAFS. <i>P.E. Jönsson</i>
16 ³⁰	[ID-400] Quasicrystal-induced nucleation in a bulk glass forming Mg–Zn–Yb liquid. <i>G. Kurtuldu</i>	[ID-237] Solid solutions of Ti-Zr-S as low-dimensional semiconductors with controllable bandgap. <i>D. Muratov</i>	[ID-108] Development of medium-low density TIAIVCrX high entropy alloy. <i>Y.C. Liao</i>	[ID-307] The thermal stability and nucleation dynamics of metallic glasses via ultrafast Flash DSC. <i>J. Perepezko</i>
16 ⁴⁵	[ID-234] Impact of alloying on properties and oxidation resistance of magnetron sputtered Zr–Hf–Cu based metallic glasses. <i>M. Zitek</i>	[ID-245] Monte Arci obsidian: a fascinating nanocomposite for archaeometry and material science. <i>V. Mameli</i>	[ID-394] Generation of 3-D functional ceramics by biomorphic transformation of highly reactive inorganic precursors. <i>S. Sprio</i>	[ID-296] The anomalous breakdown of the Stokes- Einstein relation in Ge-SD-Te and Ag-In-Sb-Te alloys and its connection to fast crystallization in the supercooled liquid. <i>S. Wei</i>
17 ⁰⁰	Coffee Break			
17 ³⁰	Poster Session I			
18 ³⁰	Close of day one			

TUESDAY 3 JULY

08⁴⁵ PLENARY – Smart magnetism: nanomaterials design for friction less transport, refrigeration and theranostics.

Michael Farle, Universitat Duisburg-Essen, Germany *Auditorium* **Chair**: D. Fiorani

	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Nanostructured Materials III Chair: P. S. Normile	Metallic Glasses III Chair : K. Kelton	Materials for Renewable Energy I Chair : L. Da Monte	Porous Materials I Chair : G. Muscas
10 ⁰⁰	[ID-175] (Invited) Tuneable single-phase magnetic behavior in chemically synthesized $AFeO_3-BF_O_4$ ($A = Bi \text{ or } La, B =$ Co or Ni) nanccomposites. <i>T. Sarkar</i>	[ID-363] (Invited) Atomistic details of ductility and structural relaxation from STZ Spectra. <i>M. Atzmon</i>	[ID-387] Engineered nano- structured thin films for thermionic-photovoltaic energy conversion at ultra-high temperatures. D.M. Trucchi	[ID-179] Nano-porous palladium used in hydrogen energy areas. <i>X. Du</i>
10 ¹⁵			[ID-182] The influence of nonstoichiometry on the optical and catalytic properties of titania nanotubes. <i>A. Valeeva</i>	[ID-190] Functionalised nanoporous gold as a new biosensor for quantitative detection in ultra-low concentrations. <i>P. Rizzi</i>
10 ³⁰	[ID-246] Bimagnetic spinel ferrite core-shell nanoparticles for magnetic fluid hyperthermia. <i>M. Sanna Angotzi</i>	[ID-194] Identifying the structural building blocks of metallic glasses using machine learning. <i>J. Maldonis</i>	[ID-192] ZnO-Fe ₂ O ₂ and ZnO- WO ₃ nanoheterostructures: from synthesis to application in photoelectrochemical water splitting. <i>D. Barreca</i>	[ID-469] Stimuli-responsive drug delivery systems based on mesoporous silica. <i>V. Zelenak</i>
10 ⁴⁵	[ID-420] The effect of Zn- substitution on magneto- structural properties of cobalt ferrite nanoparticles. <i>S. Jovanović</i>	[ID-200] Shear bands formation and plasticity of metallic glasses under laser shock peening. <i>B. Wei</i>	[ID-505] A solution-processed tetra-alkoxylated zinc phthalocyanine as hole transporting material for perovskite solar cells. G. Zanotti	[ID-464] Silica nanosystems for active antifouling protection: nanocapsules and mesoporous nanoparticles in controlled release applications. <i>L. Ruggiero</i>
11 ⁰⁰	Coffee Break			
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Nanostructured Materials IV Chair : T. Sarkar	Metallic Glasses IV Chair: B. Sarac	Materials for Renewable Energy II Chair : S. Fabbrici	Porous Materials II Chair: M. Ferretti
11 ³⁰	[ID-499] (Invited) Demagnetizing field corrections and packing- fraction distribution in magnetic nanoparticle assemblies. <i>P.S. Normile</i>	[ID-82] Metallic glasses/ composites prepared by powder metallurgy route and their mechanical properties. D. Wang	[ID-492] (Invited) Thermo- magnetic phase transitions and magnetocaloric materials. <i>V. Franco</i>	[ID-249] Wollastonite: synthesis and additive manufacturing of porous-controlled scaffolds. <i>M.C. Luna</i>
11 ⁴⁵		[ID-110] The evolution of ZrCu precipitation and mechanical properties improvement of the Zr-Cu-AI-Co bulk metallic glass composite by inoculating with Ta particles.		[ID-341] Silica aerogels – fabrication, properties and overcoating with diamond thin film. <i>J. Torres-Rodríguez</i>

P.H. Tsai

12 ⁰⁰	[ID-475] Superspin glass and exchange bias behaviour of a dense assembly of uttra-small Mn ferrite nanoparticles: Monte Carlo simulations study. <i>M. Vasilakaki</i>	[ID-121] Microstructure and mechanical properties of metallic nanoglasses prepared by nanoparticle consolidation. <i>O. Adjaoud</i>	[ID-67] Assessing two rapid quenching techniques for the production of magnetocaloric alloys. <i>A. Gebert</i>	[ID-43] Behavior of cementitious materials with mineral additions towards the transport of ionic species: application to electrokinetic remediation processes. <i>I. Martinez</i>
12 ¹⁵	[ID-240] In-situ XAS study of real-time schlenk line synthesis hollow γ -Fe ₂ O ₃ nanoparticles using synchrotron beam at the advanced photon source. <i>S. Chattopadhyay</i>	[ID-334] Atomic structure and mechanical behavior of amorphous TiNiCu alloy processed by severe plastic deformation. A. Churakova	[ID-126] Experimental study of Curie temperature distributions on mechanically alloyed Fe ₇₀ Zr ₃₀ systems: effect on magnetocaloric response and magnetic properties. <i>A.F. Manchón-Gordón</i>	[ID-96] Three-dimensional bicontinuous nanoporous materials by vapor phase dealloying. <i>Z. Lu</i>
12 ³⁰	[ID-412] Tayloring the coercivity of Sm-Co-Cu thin films with variation of the copper content. <i>M. de Campos</i>	[ID-346] FeCoNi(CrSi) high entropy alloy with good soft magnetic and mechanical properties. <i>F. Li</i>	[ID-383] Influence of atomic disorder on the ground state of Ni-Co-Mm-Sn alloys with regular and inverse Heusler structures: ab initio study. <i>V. Buchelnikov</i>	[ID-204] Using a unique complex surface treatment, sand- blasting/acid-etching/alkaline- immersion, to enhance the corrosion resistance and biological responses of titanium surface. <i>YS. Sun</i>
12 ⁴⁵	[ID-54] Engineered Gd-Co based multilayer stack to enhanced magneto-caloric effect and relative cooling power. <i>M. Tadout</i>	$\label{eq:linear} \begin{array}{llllllllllllllllllllllllllllllllllll$	[ID-426] Development of Fe-rich soft magnetic metallic glass matrix composite utilizing nucleation seed. <i>K.J. Kim</i>	
13 ⁰⁰	Lunch			
		torial and high-through	hout methods for the	investigation of novel
14 ³⁰	KEYNOTE – Combina materials. Alfred Ludwig, Ruhr-Uni Auditorium Chair: M. Farle	versity Bochum, German	/	
14 ³⁰	KEYNOTE – Combina materials. Alfred Ludwig, Ruhr-Uni <i>Auditorium</i> Chair: M. Farle Parallel Session 1 <i>Auditorium</i>	versity Bochum, German Parallel Session 2 Accademia	Parallel Session 3 Taurini	Parallel Session 4 Caudini
14 ³⁰	KEYNOTE – Combina materials. Alfred Ludwig, Ruhr-Uni <i>Auditorium</i> Chair: M. Farle Parallel Session 1 <i>Auditorium</i> Nanostructured Materials V Chair: B.S. Murthy	Versity Bochum, Germany Parallel Session 2 <i>Accademia</i> Metallic Glasses V Chair : J.M. Pelletier	Parallel Session 3 Taurini Materials for Renewable Energy III Chair: C. Maccato	Parallel Session 4 Caudini Advanced Preparation and Processing Techniques III Chair: A. Santagata
14 ³⁰ 15 ³⁰	KEYNOTE – Combina materials. Alfred Ludwig, Ruhr-Uni <i>Auditorium</i> Chair: M. Farle Parallel Session 1 <i>Auditorium</i> Nanostructured Materials V Chair: B.S. Murthy [ID-498] (Invited) Reversible sodium and lithium insertion in iron fluorides. N. Pinna	Versity Bochum, Germany Parallel Session 2 Accademia Metallic Glasses V Chair: J.M. Pelletier [ID-258] Evaluation of governing factors for mechanical properties in Ni-Transition metal binary metallic glasses. H. Ahn	Parallel Session 3 Taurini Materials for Renewable Energy III Chair: C. Maccato IID-109] The effect of reactive surface area of Ni- Ba _{0.5} Sr _{0.2} Ce _{0.2} To _{0.2} N _{0.3} anodes on the performance of proton-conducting solid oxide fuel cell. J.S. Jang	Parallel Session 4 <i>Caudini</i> Advanced Preparation and Processing Techniques III Chair: A. Santagata [ID-158] Further insights into vapour deposited ultrastable glasses from dielectric spectroscopy. <i>C. Rodriguez-Tinoco</i>
14 ³⁰ 15 ³⁰ 15 ⁴⁵	KEYNOTE – Combina materials. Alfred Ludwig, Ruhr-Uni <i>Auditorium</i> Chair: M. Farle Parallel Session 1 <i>Auditorium</i> Nanostructured Materials V Chair: B.S. Murthy [ID-498] (Invited) Reversible sodium and lithium insertion in iron fluorides. <i>N. Pinna</i>	Versity Bochum, Germany Parallel Session 2 Accademia Metallic Glasses V Chair: J.M. Pelletier [ID-258] Evaluation of governing factors for mechanical properties in Ni-Transition metal binary metallic glasses. H. Ahn [ID-73] Thermoplastic formability of biocompatible Ti- and Zr- based bulk metallic glasses. M. Calin	Parallel Session 3 Taurini Materials for Renewable Energy III Chair: C. Maccato III (ID-109) The effect of reactive surface sandes on the performance of proton-conducting solid oxide fuel cell. J.S. Jang IID-141] (ID-141) Highly nanostructured doped NiCo ₂ O ₄ nanowires as performing cathode materials for Li-O ₂ cells. D. Giacco	Parallel Session 4 Caudini Advanced Preparation and Processing Techniques III Chair: A. Santagata [ID-158] Further insights into vapour deposited ultrastable glasses from dielectric spectroscopy. C. Rodriguez-Tinoco [ID-51] TiO,N, coatings deposited by Radio frequency magnetron sputtering. N. Saoula
14 ³⁰ 15 ³⁰ 15 ⁴⁵	KEYNOTE – Combina materials. Alfred Ludwig, Ruhr-Uni <i>Auditorium</i> Chair: M. Farle Parallel Session 1 <i>Auditorium</i> Nanostructured Materials V Chair: B.S. Murthy [ID-498] (Invited) Reversible sodium and lithium insertion in iron fluorides. <i>N. Pinna</i>	Versity Bochum, Germany Parallel Session 2 Accademia Metallic Glasses V Chair: J.M. Pelletier [ID-258] Evaluation of governing factors for mechanical properties in Ni-Transition metal binary metallic glasses. H. Ahn [ID-73] Thermoplastic formability of biocompatible Ti- and Zr-based bulk metallic glasses. M. Calin [ID-78] FeNi-based bulk metallic glasses. M. Calin [ID-78] FeNi-based bulk metallic glasses. B. Shen	Parallel Session 3 Taurini Materials for Renewable Energy III Chair: C. Maccato [ID-109] The effect of reactive surface area of Ni- Ba _{0.85702} Ce _{0.8270.270.203.5} anodes on the performance of proton-conducting solid oxide fuel cell. J.S. Jang [ID-141] Highly nanostructured doped NiCo ₂ O, nanowires as performing cathode materials for Li-O ₂ cells. D. Giacco [ID-168] Methanol oxidation on nanotubular PICeO ₂ composites. M.S. Martínez Tovar	Parallel Session 4 Caudini Advanced Preparation and Processing Techniques III Chair: A. Santagata [ID-158] Further insights into vapour deposited ultrastable glasses from dielectric spectroscopy. C. Rodriguez-Tinoco [ID-51] TiO,N, coatings deposited by Radio frequency magnetron sputtering. N. Saoula [ID-324] Characterization and piezoelectric properties of promising potassium-sodium niobate (KNN) nanopowders through facile wet method. N. Senes

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16 ³⁰	[ID-106] Nanosized tantalum powder reduced by magnesium gas from tantalum oxide. <i>DW. Lee</i>	[ID-131] Origin of large plasticity and multiscale effects in FeNi- based metallic glass. <i>B. Sarac</i>	[ID-260] Hydrogen storage and hydrolysis behaviors of core- shell structured Mg based nano composites synthesized through arc plasma method. <i>J. Zou</i>	[ID-271] Development of W- based refractory HEA as fusion reactor materials with low activation elements. <i>I.H. Kim</i>
16 ⁴⁵	[ID-230] Fabrication of porous titania (TiO ₂) thin films with a high specific surface area using nano-cellulose and analysis of their characteristics. <i>Y. Yoon</i>	[ID-352] Early plasticity in metallic glasses. <i>D. Tönnies</i>	[ID-72] Ni-Nb-Zr amorphous membranes: a study of crystallization and hydrogen solubility. <i>A. Paolone</i>	[ID-53] Corrosion properties and bio-evaluation of nanostructured titanium alloys processed by HPT. <i>A.M. Jorge Junior</i>
17 ⁰⁰	Coffee Break			
17 ³⁰	Poster Session II			
18 ³⁰	Close of day two			



WEDNESDAY 4 JULY

08⁴⁵ **PLENARY** – Heterogeneous dynamics of metallic glass-forming liquids. Paul Voyles, University of Wisconsin, USA

Auditorium

Chair: L. Greer

	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Metallic Glasses VI Chair : M. Atzmon	Nanostructured Materials VI Chair : L. Battezzati	Materials for Renewable Energy IV Chair : J.S.C. Jang	Magnetic, Transport and Optical Properties from Nanoscale to Bulk I Chair : K.N. Trohidou
10 ⁰⁰	[ID-304] (Invited) Athermal changes in structure induced by thermal cycling of metallic glasses.	[ID-116] (Invited) Tri-segmented magnetic nanowires with antiparallel alignment: suitable platforms for biomedical	[ID-102] High entropy alloys for hydrogen storage applications. <i>W.J. Botta</i>	[ID-468] (Invited) Simultaneous local heating/thermometry based on plasmonic magnetochromic nanodomes.
10 ¹⁵	L. Greer	applications with minimized agglomeration? <i>M.D. Baró</i>	[ID-46] Synthesis and hydrogen storage ability of the high- entropy alloys. <i>V. Zadorozhnyy</i>	J. Nogués
10 ³⁰	[ID-180] Statistics and the spatiotemporal correlations of stress and strain in model bulk metallic glasses. <i>A.E. Lagogianni</i>	[ID-191] Novel and sensitive immunosensor based on metal- enhanced fluorescence by nanostructured surface: application to human IgG detection in urine. <i>B. Della Ventura</i>	[ID-167] Efficient hydrogen evolution on Zn doped MoS ₂ nanosheets. <i>J.R. Vargas Garcia</i>	[ID-494] (Invited) Enhanced magnetoelectric effect in m-type hexaferrites by Co substitution into trigonal bi-pyramidal sites. <i>S.A. Cavill</i>
10 ⁴⁵	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	[ID-50] Microstructure and surface design of metastable beta-Ti alloys for biomedical use. <i>A. Gebert</i>	[ID-165] Hydrogen evolution on nanotubular MoS ₂ -PtS ₂ /C composites. <i>A. Verdejo-Palacios</i>	

11⁰⁰ Coffee Break

	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 Caudini
	Metallic Glasses VII Chair: J. Eckert	Nanostructured Materials VII Chair : T. Teranishi	Materials for Renewable Energy V Chair: S. Nakamae	Magnetic, Transport and Optical Properties from Nanoscale to Bulk II Chair : A. Zhukov
11 ³⁰	[ID-257] (Invited) Real time determination of visco-plastic strain in metallic glasses via x- ray scattering. <i>Y. Sun</i>	[ID-235] CoFe ₂ O ₄ -ZrO ₂ nanocomposites, modification with gold nanoparticles and their SERS application. <i>A. Del Tedesco</i>	[ID-407] (Invited) Nanofluids in energy systems- prospects and challenges. S.M.S. Murshed	[ID-391] (Invited) Out-of- equilibrium cation distribution in ferrites: static and dynamic magnetic properties. <i>G. Barrera</i>
11 ⁴⁵		[ID-211] Detection of toxic/ flammable gases by Mn_0O_4 based sensors for safety, health and public security applications. <i>L. Bigiani</i>		
12 ⁰⁰	[ID-274] On the processing, mechanical and structural characterization of ZrNi amorphous thin films. <i>R. Daudin</i>	[ID-456] Magnetic nano- composites for biomedical and magnetocaloric application. <i>A. Zelenakova</i>	[ID-288] Thermophoretic properties of colloidal dispersions of maghemite nanoparticles in ionic liquids based on TFSI anions. <i>M. Sarkar</i>	[ID-212] Dynamical magnetic properties of interacting ultra-small nanoparticle systems. <i>R. Mathieu</i>

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12 ¹⁵	[ID-91] Effect of cobalt addition on microstructural evolution, thermal stability and magnetic properties of Fe-based amorphous alloys. <i>C. Parra Velásquez</i>	[ID-404] Using core-level shifts as a descriptor for identification of nanoparticles with optimized catalytic activity. <i>I. Abrikosov</i>	[ID-477] Study of the Seebeck coefficient in a system of electrolyte with magnetic nanoparticles. <i>P. Trohidou</i>	[ID-229] On the magnetic properties of Fe-doped hydroxyapatite nanoparticles. <i>A. Adamiano</i>
12 ³⁰	[ID-206] The effect of heat treatment on magnetic and thermal properties of finemet- type ribbons and microwires. <i>M. Churyukanova</i>	[ID-83] Nano-sized silicate hydrate for high strength and durable concrete. <i>G. Ferrari</i>	[ID-493] Charge distribution on the surface of CoFe ₂ O ₄ nanoparticles. <i>N. Ntallis</i>	[ID-44] Curie temperature changes in Nd doped Yig by mechanosynthesis. <i>C.A. Cortes Escobedo</i>
12 ⁴⁵	[ID-273] Monte Carlo simulation of magnetic structures in amorphous alloys based on Reare-Earth metals. <i>I. Pashueva</i>	[ID-148] Towards micro- and nanostructured AIZnCu alloys cast from commercial-purity metals. <i>W.K. Krajewski</i>		[ID-458] FePd magnetic nanoparticles by dewetting of thin films. <i>P. Tiberto</i>
13 ⁰⁰	Lunch			
14 ³⁰	KEYNOTE – H ₂ Photo-generation promoted by iron oxide nanoarchitectures prepared by CVD-Based approaches. Chiara Maccato, Padova University, Italy <i>Auditorium</i> Chair : A. Paolone			
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Metallic Glasses VIII Chair: J. Bhatt	Nanostructured Materials VIII Chair: M. D. Barò	Materials for Renewable Energy VI Chair : S. Nakamae	Magnetic, transport and optical properties from nanoscale to bulk III Chair : R. Mathieu
a - 30		[ID-450] (Invited) Pseudo- morphic transformation of nanocrystals by element replacement. <i>T. Teranishi</i>		
15	[ID-117] On the crystallization of a new high-entropy metallic glass studied by Mössbauer spectroscopy. <i>S.L. Panahi</i>	[ID-450] (Invited) Pseudo- morphic transformation of nanocrystals by element replacement. <i>T. Teranishi</i>	[ID-283] (Invited) Effect of non- equilibrium processing on the synthesis and thermoelectric properties of skutterudites and half Heusler compounds. <i>M. Baricco</i>	[ID-164] (Invited) Engineering of magnetic properties and GMI effect in Fe-rich magnetic microwires by stress annealing. <i>A. Zhukov</i>
15 ⁴⁵	[ID-117] On the crystallization of a new high-entropy metallic glass studied by Mössbauer spectroscopy. <i>S.L. Panahi</i> [ID-94] HRTEM investigation of diffusion in glassy multilayer films. <i>S. Ketov</i>	[ID-450] (Invited) Pseudo- morphic transformation of nanocrystals by element replacement. <i>T. Teranishi</i>	[ID-283] (Invited) Effect of non- equilibrium processing on the synthesis and thermoelectric properties of skutterudites and half Heusler compounds. <i>M. Baricco</i>	[ID-164] (Invited) Engineering of magnetic properties and GMI effect in Fe-rich magnetic microwires by stress annealing. <i>A. Zhukov</i>
15 ⁴⁵ 16 ⁰⁰	 [ID-117] On the crystallization of a new high-entropy metallic glass studied by Mössbauer spectroscopy. S.L. Panahi [ID-94] HRTEM investigation of diffusion in glassy multilayer films. S. Ketov [ID-227] Fluctuation electron microscopy (FEM) of amorphous CuZr and nanocrystalline Cu nanolaminates. F.A. Davani 	 [ID-450] (Invited) Pseudo- morphic transformation of nanocrystals by element replacement. <i>T. Teranishi</i> [ID-155] Solution combustion synthesis of nanostructured non- oxide materials: alloys, intermetalics, nitrides. <i>S. Roslyakov</i> 	 [ID-283] (Invited) Effect of non-equilibrium processing on the synthesis and thermoelectric properties of skutterudites and half Heusler compounds. <i>IM. Baricco</i> [ID-369] Augmented thermoelectric power generation in ferrofluid based thermoelectro chemical cells. <i>K. Bhattacharya</i> 	 [ID-164] (Invited) Engineering of magnetic properties and GMI effect in Fe-rich magnetic microwires by stress annealing. A. Zhukov [ID-225] Development of magnetic anisotropy in CoO/Fe(001) by bottom-up interface engineering. A. Picone
15 ⁴⁵ 16 ⁰⁰ 16 ¹⁵	 [ID-117] On the crystallization of a new high-entropy metallic glass studied by Mössbauer spectroscopy. <i>S.L. Panahi</i> [ID-94] HRTEM investigation of diffusion in glassy multilayer films. <i>S. Ketov</i> [ID-227] Fluctuation electron microscopy (FEM) of amorphous CuZr and nanocrystalline Cu nanolaminates. <i>F.A. Davani</i> [ID-124] Measurement of glass transition temperature of metallic glasses using step-scan modulated temperature differential scanning calorimetry. <i>P.P. Jana</i> 	 [ID-450] (Invited) Pseudo- morphic transformation of nanocrystals by element replacement. <i>T. Teranishi</i> [ID-155] Solution combustion synthesis of nanostructured non- oxide materials: alloys, intermetallics, nitrides. <i>S. Roslyakov</i> [ID-209] Grain growth kinetics in Al₂CoCrFeNi (x=0, 0.3, 0.6, 1 mol) high entropy alloy synthesized through mechanical alloying. <i>M.M. Garlapati</i> 	[ID-283] (Invited) Effect of non- equilibrium processing on the synthesis and thermoelectric properties of skutterucites and half Heusler compounds. <i>M. Baricco</i> [ID-369] Augmented thermoelectric power generation in ferrofluid based thermoelectro chemical cells. <i>K. Bhattacharya</i> [ID-321] Role of Ta in improving thermoelectric properties of nanocrystalline Ti,₊Ta,NiSn (x=0, 0.01, 0.03, 0.05) alloys synthesized by mechanical alloying. <i>A. Karati</i>	 [ID-164] (Invited) Engineering of magnetic properties and GMI effect in Fe-rich magnetic microwires by stress annealing. A. Zhukov [ID-225] Development of magnetic anisotropy in CoO/Fe(001) by bottom-up interface engineering. A. Picone [ID-443] Effect of H⁺ irradiation on magneto-optical properties of Co- doped ZnO thin films. A.Di Trolio



16 ⁴⁵	[ID-90] 3D printing of Fe-based bulk metallic glass and composites with large dimensions and enhanced toughness by HVOF thermal spray. L. Liu	[ID-303] Liquid state amorphization of interphases in metal-silicon couples. <i>R. Walser</i>		[ID-308] Magnetic properties of Fe- Ni permalloy produced with selective laser melting. <i>A. Mazeeva</i>
17 ⁰⁰	Coffee Break			
17 ³⁰	Poster Session III			
18 ³⁰	Close of day three			
	20:00 CONFERENCE DINNER			

THURSDAY 5 JULY

	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Nanostructured Materials IX Chair: W. Botta	Metallic Glasses IX Chair : J. Eckert	Phase Transformation I Chair : M. Baricco	Advanced Preparation and Processing Techniques IV Chair: L. Battezzati
10 ⁰⁰	[ID-500] (Invited) Magnetic Fe- based nanoarchitectures.	[ID-132] (Invited) A structural study of a rejuvenation effect in	[ID-410] (Invited) Stable and metastable crystalline phases in	[ID-444] (Invited) Indirect assessment of sample
10 ¹⁵	J.M. Greneche	amorphous Gd-Co metal by anomalous x-ray scattering. S. Hosokawa	the Al-Ge and Al-Ce-Win systems: structural characterization and formation mechanisms. <i>M. Kaufman</i>	temperature in plasma environment during electric discharge assisted mechanical milling. <i>A. Calka</i>
10 ³⁰	[ID-159] Deformation of nanocrystalline PdAu and concurrent in-situ X-ray diffraction. <i>M.J. Deckarm</i>	[ID-127] Rejuvenation in metallic glasses: high resolution electron microscopy study. <i>I. Ivanov</i>	[ID-122] Mechanical spectroscopy as a tool to study first and second order transitions in metastable Fe- Ga alloys. <i>I. S. Golovin</i>	[ID-353] The structure of "V ₄ Nb ₁₈ O ₅₅ " metastable ternary oxide compound prepared by extended ball milling of V2O5 and Nb2O5 powders and thermal treatment. <i>S. Enzo</i>
10 ⁴⁵	$eq:linearized_linearized$	[ID-161] The correlation between rejuvenation behavior and boson heat capacity peak of bulk metallic glass. <i>H. Zhou</i>	[ID-140] Kinetics of polymorphic transformations of pharmaceuticals induced by mechanical milling. JF. Willart	[ID-47] In-situ dispersed La oxides of Al6061 composites by mechanical alloying. <i>CL. Chen</i>
11 ⁰⁰	Coffee Break			
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 Caudini

	Nanostructured Materials X Chair: J.M: Greneche	Metallic Glasses X Chair : S. Hosokawa	Phase Transformation II Chair: M. Kaufman	Advanced Preparation and Processing Techniques V Chair: L. Gavioli
11 ³⁰	[ID-425] In-situ compression of hollow BN nanoparticles in a high-resolution transmission electron microscope. <i>K. Firestein</i>	[ID-365] Cryogenic thermal and mechanical processing of Ti-Ni- Cu-Zr based crystal/glassy alloys. <i>J. Jiang</i>	[ID-123] Structure and magnetic properties of Fe-Ga alloys doped by Tb. <i>V. Palacheva</i>	[ID-203] (Invited) New nanostructured composite materials with partially-carbonized elastomer matrix. <i>S. Kaloshkin</i>
11 ⁴⁵	[ID-188] Amorphous TiAl freestanding thin films studied by in-situ TEM. <i>C. Rentenberger</i>	[ID-457] Two-way structural tuning of the ordering states in a metallic glass. <i>H</i> .Lou	[ID-452] Preparation and characterization of novel Heusler type magnetic microwires. <i>M. Ipatov</i>	
12 ⁰⁰	[ID-390] Effect of biaxial cyclic severe deformation on structure and properties of Ti-Ni alloys. <i>V. Komarov</i>	[ID-218] Characterization of the stress-temperature-time relaxation spectrum of metallic glasses. <i>E. Pineda</i>	[ID-301] Current annealing crystallization of Co-rich amorphous microwires for miniature hard-magnet applications. <i>A. Adam</i>	$ \begin{array}{llllllllllllllllllllllllllllllllllll$
12 ¹⁵	[ID-409] Interface polarized charge transfer in half-metal / semiconductors nanocomposites. <i>O. Pana</i>	[ID-184] Evaluating metallic glasses as research areas using bibliometric maps and indicators. <i>D.H. Milanez</i>	[ID-481] Electronic transport properties as a tool to characterize phases of alloys and their changes. <i>JG. Gasser</i>	[ID-151] The influences of processing parameters on forming characterizations in the infrared heating type gas pressure forming system. <i>K.R. Lim</i>
12 ³⁰	[ID-419] Microstructure, hardness and their thermal stability in electrodeposited nanccrystalline Ni layers with different Mo content. <i>G. Kapoor</i>	[ID-342] Transition from decagonal to icosahedral structure resulted by Co to Fe substitution in Al-Cu-Co-Fe alloys. D. Shulyatev	[ID-432] Phase stabilisation and stress evolution in tantalum thin films deposited by magnetron sputtering. <i>A. Michel</i>	[ID-302] Synthesis of manganese oxide nanoparticles for electrocatalysis applications using supercritical carbon dioxide. <i>V. Zefirov</i>



12 ⁴⁵	[ID-326] On precipitation of icosahedral nanoquasicrystalline phase in Hf-Cu-Ni amorphous alloys. A. Khond	[ID-282] Crystallization of Cu-Zr thin film metallic glass via femtosecond laser heating. <i>J. Antonowicz</i>	[ID-107] Synthesis of diamond like phase from supersaturated solid solution of nickel-carbon system prepared by high energy milling. <i>N. Kundan</i>	[ID-45] Mechanical investigation approach to optimize the HVOF Fe-based amorphous coatings reinforced by B4C nanoparticles. <i>B. Movahedi</i>	
13 ⁰⁰	Lunch				
14 ³⁰	KEYNOTE – Applications and potential of 3D printing: from polymers to magnetic solid state materials. Dieter Suess, Vienna University of Technology, Austria <i>Auditorium</i> Chair: G. Barucca				
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>	
	Magnetic, transport and optical properties from nanoscale to bulk IV Chair : P. Jonsson	Nanostructured Materials XI Chair: : T. Sarkar	Mechanical Properties II Chair: D. Barreca	Applications I Chair: S. Enzo	
15 ³⁰	[ID-248] (Invited) Artificial all- amorphous magnetic superstructures.	[ID-280] (Invited) Nanogranular materials obtained by gas phase synthesis: physical properties and multimodal multiscale	[ID-216] (Invited) Comparing structural and mechanical properties of additive manufactured metallic parts after	[ID-378] (Invited) High strength Ti- based alloys for structural and biological applications.	
15 ⁴⁵	G. Muscas	metrology. L. Gavioli	selected thermal treatments. G. Barucca	D. Louzgune-Luzgin	
16 ⁰⁰	[ID-263] Optimization of magnetic properties in (Hf,Cr)- Co-B alloys by structural transformations. <i>A. Musiał</i>	[ID-77] Preparation and characterization of Pt/C nanotubular heterostructures by a simple vapor deposition method. <i>E. Jiménez Marín</i>	[ID-397] Mechanical properties of a hot rolled and annealed medium Mn automotive steel. <i>J.L. Hernandez Rivera</i>	[ID-285] Tunable corrosion behavior of calcium phosphate coated Fe-Mn-Si alloys for bone implant applications. <i>R. Drevet</i>	
16 ¹⁵	[ID-331] Correlation of magnetic and electrical properties of Co- rich amorphous ferromagnetic microwires after DC Joule heating treatment. <i>S. Gudoshnikov</i>	[ID-172] Using phenol formaldehyde resin and organic compound vapors to synthesize graphite encapsulated nickel nanoparticles in an arc- discharge system. <i>YC. Huang</i>	$\begin{array}{l lllllllllllllllllllllllllllllllllll$	[ID-497] Biodetection of histamine in wine: magnetic versus plasmonic labels. <i>M. Fernández</i>	
16 ³⁰	[ID-349] Structure formation and magnetic properties of alloys based on Sm ₂ Fe ₁ -N ₂ compound after severe plastic deformation by torsion. <i>I. Shchetinin</i>	[ID-150] Nano-structured CoCrFeMnNi high-entropy alloy produced by cryogenic multi- pass caliber rolling. <i>JW. Won</i>		[ID-436] Study of the structure and functional properties of metastable beta $T_{i_1}Z_{r_4}Nb$ (at.%) alloy for biomedical applications subjected to combined thermomechanical treatment. <i>V. Sheremetyev</i>	
16 ⁴⁵	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$			[ID-465] Structural Investigation of modified bitumens by physical chemistry techniques. <i>C.O. Rossi</i>	
17 ⁰⁰	Coffee Break				
17 ³⁰	Poster Session IV				
18 ³⁰	Close of day four				

FRIDAY 6 JULY

08³⁰ PLENARY – Self assembly of carbon-based materials from nano-to macro-scale: when enemies become friends.

Vincenzo Palermo, ISOF-CNR, Italy Auditorium Chair: S. Laureti

	Parallel Session 1 Auditorium	Parallel Session 2 Accademia	Parallel Session 3 <i>Taurini</i>	Parallel Session 4 <i>Caudini</i>
	Nanostructured Materials XII Chair: V. Palermo	Metallic Glasses XI Chair: P. Voyles	Mechanical Properties III Chair: Z. Wang	Phase Transformation III Chair: M. Kaufamn
09 ³⁰	[ID-418] (Invited) Advances in two-dimensional planar spintronics. <i>M.V. Kamalakar</i>	[ID-118]Confinedglasstransitioninamorphous/amorphousmetallicnanolayers.F. Spieckermann	[ID-37] Elastic and Anelastic behavior of small dimensioned Aluminum. <i>E. Campari</i>	[Id-144] Existence of recrystallized and seaweed structures in rapidly solidified Ni ₃ Ge intermetallic. <i>N. Haque</i>
09 ⁴⁵		[ID-120] Enhancing the tensile ductility of bulk metallic glasses by designing structural heterogeneities. <i>S. Scudino</i>	[ID-205] Mechanical properties of bulk metallic glasses and composites. <i>L. Krämer</i>	[ID-262] Study of colour and mechanical property by trasition of Mg_Si to Si phase distribution and ratio of Al-based blue colour alloy. <i>S. Mun</i>
10 ⁰⁰	[ID-372] Manufacturing technique of graphene reinforced aluminum matrix nanocomposite. <i>H. Rudianto</i>	[ID-239] Structural features of binary amorphous Zr-TM and Al- TM alloys as an aid towards a better understanding of multinary bulk metallic glasses. <i>M. Stiehler</i>	[ID-156] A novel numerical approach to simulate 3D printing material. S. Abid	[ID-329] Effect of nitrogen on the mechanical properties of FCC high entropy alloys. <i>J.S. Lee</i>
10 ¹⁵	[ID-393] Synthesis and characterization of graphite- encapsulated Au/Pt nanoparticles. <i>D. Ağaoğulları</i>	[ID-336] Highly oriented ferromagnetic polymers based on Co-rich amorphous microwires. <i>E. Kostitsyna</i>	[ID-406] In situ micro-cantilever tests to study fracture behavior of magnesium reinforced with carbon nanotubes by an alternative technique. <i>C. Merino</i>	[ID-339] Effect of cooling rate on the microstructure and mechanical property of commercial grey iron rapidly cooled in Nitrogen and Helium. <i>O. Oloyede</i>
10 ³⁰	[ID-351] Obtaining and thermal stability of MnSI _{1.75} intermetallic compound processed by mechanical alloying. <i>I. Chicinas</i>	[ID-287] Size-dependent transition in the failure mode of brittle metallic glass. <i>R.Qu</i>	[ID-297] Effect of direct addition of Y ₂ Ti ₂ O ₇ , Y ₂ Zi ₂ O ₇ and Y ₂ Hf ₂ O ₇ on mechanical behavior of austenitic ODS SS316L steels. <i>K. Gothandapani</i>	[ID-476] Alpha phase precipitation in Ti-Mo alloys with Sn addition during aging heat treatment. <i>R. Caram</i>
10 ⁴⁵	[ID-317] Behavior analysis of some composite polymers reinforced with metallic nanoparticles. D. Gavrila	[ID-241] A study of structural evolution of a Pd based metallic glass using fluctuation electron microscopy. <i>L. Tian</i>		[ID-446] A kinetics-based model for prediction of final phases in equiatomic High Entropy Alloys. <i>C. Chattopadhyay</i>

11⁰⁰ Coffee Break

	Parallel Session 1	Parallel Session 2	Parallel Session 3	Parallel Session 4
	Auditorium	Accademia	<i>Taurini</i>	Caudini
	Nanostructured Materials XIII	Metallic Glasses XII	Mechanical Properties IV	Applications II
	Chair: D. Mirabile Gattia	Chair: B.S. Murthy	Chair : E. Campari	Chair : M. Salvador-Fernandez
11 ³⁰	[ID-441] Processing of high strength AI alloy composites reinforced with functionalized multi-walled carbon nanotubes (MWCNT). <i>E.M. Mazzer</i>	[ID-93] Serrated flow during inhomogeneous deformation of bulk metallic glasses: from self- organized critical to chaotic dynamics. <i>M. Khanouki</i>	[ID-69] (Invited) Ti-based metallic glasses reinforced Al alloy matrix composites. <i>Z. Wang</i>	[ID-482] Selective oxidation of benzyl alcohol catalyzed by CeO ₂ -nanorods supported palladium. <i>S.S. Moeini</i>
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11 ⁴⁵		[ID-360] Creating single element metallic glasses from molecular dynamics simulations. <i>J. Bean</i>		[ID-160] Influence of the correction to the Wills-Harrison approach on the thermodynamics of liquid transition-metal binary alloys. <i>N. Dubinin</i>
12 ⁰⁰	$\label{eq:content} \begin{array}{llllllllllllllllllllllllllllllllllll$	[ID-371] Comparative analysis of thermodynamically predicted glass forming compositions with amorphous Ca-Mg-Cu alloy system. <i>J. Bhatt</i>	[ID-129] Fatigue properties of nanocrystalline Cu films on a flexible substrate. <i>B. Zhang</i>	[ID-202] Local structure near a Ni atom in a rapidly quenched Al _{0.3} CrFeCoNi high entropy alloy. <i>T. Yamamoto</i>
12 ¹⁵	[ID-92] Development of P-free Fe-Si-B-Cu soft magnetic nanocrystalline alloys with high Cu concentrations. <i>Y. Li</i>	[ID-403] Measurement of the internal shear stress by nanoindentation tests in plastically deformed Zr4aTi, ICu10Ni10Bezs bulk metallic glass. <i>M. Abas</i>	[ID-146] Development of a titanium metastable alloy with promi- sing mechanical properties for self-expansible stent applications. <i>A.H. Plaine</i>	[ID-375] Thermoluminescence of carbon quantum dots doped aluminium oxide exposed to X ray and UV radiation. <i>C. Gomez Solis</i>
12 ³⁰	[ID-115] Effects of Mg content and annealing temperature on electrical and optical properties of ITO/AgMg films. <i>H.K. Lin</i>	[ID-30] The role of topologically closed-packed structures in the phase transitions of Ta. <i>Z. Tian</i>		[ID-313] Effect of Ag decorated MWCNTs on mechanical reliability of Sn-58wt%Bi solder. <i>C-J Lee</i>
12 ⁴⁵				
13 ⁰⁰	Lunch			
	Parallel Session 1 Auditorium	Parallel Session 2 Accademia		Parallel Session 3 <i>Caudini</i>
	Nanostructured Materials XIV	Metallic Glasses XIII		Mechanical Properties V and

	Chair: A. D'Elia	Chair: J. Bhatt	Applications III Chair: P. Konda Gokuldoss
14 ³⁰	[ID-266] Impact of the additives stoichiometry on the properties of HAp/TiO _y nanocomposite. <i>S. Rempel</i>	[ID-471] Effect of ultrasonic vibration on the microstructure and mechanical properties of a Zr-based bulk metallic glass. <i>S. Li</i>	[ID-68] Ductility improvement mechanism of pure titanium with oxygen solid solution after water quenching. <i>S. Kariya</i>
14 ⁴⁵	[ID-268] Adsorption of xanthine on citrate-stabilized gold nanoparticles. <i>M. Muniz-Miranda</i>	[ID-189] Characterization of heterogeneities in a CuZr based bulk metallic glass after high pressure torsion deformation. <i>C. Ebner</i>	$\label{eq:linear_state} \begin{array}{llllllllllllllllllllllllllllllllllll$
15 ⁰⁰	[ID-298] Synthesis of nickel ferrite by CTAB assisted hydrolytic stripping. <i>A.J. Muñiz</i>	[ID-176] Magic oxygen in metallic glasses: tuning Cu-Ag porous nanomembrane into nanoporous Ag-Cu@Ag core- shell alloy. <i>X. Liu</i>	[ID-39] SnO ₂ coatings on 304 stainless steel for corrosion protection. <i>A. Gutiérrez</i>
15 ¹⁵		[ID-402] Nonlinear metallic glass flat springs. <i>N. Panagiotopoulos</i>	[ID-199] Ti substituted alumina dispersion-strengthened Cu alloy fabricated via internal oxidation. J.H. Ahn
a = 45			

Programme Short - Friday 6 July



Programme EXTENDED

MONDAY 2 JULY

norr	ING
08 00	Registration
09 ³⁰	Conference Opening
10 00	PLENARY – Structure modulation and nanocrystallization of metallic glasses: how to tune mechanical properties. Jürgen Eckert, Austrian Academy of Science & Montanuniversitat Leoben, Austria <i>Auditorium</i> Chair: K. Kelton
11 ⁰⁰	Coffee Break
	Parallel Session 1 Auditorium
	Metallic Glasses I Chair : M. Atzmon
11 ³⁰	[ID-99] (Invited) Origin of fragility and the onset of cooperative dynamics in liquids. K. Kelton Washington University
12 ⁰⁰	[ID-98] Corrosion and impedance behaviour of $Zr_{42}Cu_{50}Ag_8$ bulk metallic glass in artificial physiological solutions. <u>S.B. Arya</u> ¹ , N. Singh ¹ , J. Nayak, J. Bhat ² ⁷ <i>NITK Surathkal</i> ² <i>VNIT</i>
12 ¹⁵	 [ID-133] Nitrogen plasma immersion ion implantation treatment enhances the corrosion resistance, blood coagulation, and cell response of Zr-based bulk metallic glass for implant applications. <u>H. Huang¹, H-M Huang¹, Y-S Sun¹, W. Kai², W. Zhang³</u> ¹ Department of Dentistry, National Yang-Ming University, Taipei, Taiwan ² Institute of Materials Engineering, National Taiwan Ocean University, Keelung, Taiwan ³ School of Materials Science & Engineering, Dalian University of Technology, Dalian, China

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12³⁰ [ID-152] Characterization of oxide layers developed on ZrCuAI-based bulk metallic glasses during gaseous thermochemical treatment.

<u>S. Haratian</u>, M. Villa, F.B. Grumsen, T.L. Christiansen, M.A.J. Somers Technical University of Denmark (DTU)

12⁴⁵ **[ID-163]** Atomic structure and devitrification of Ca-based metallic glasses.

<u>K. Saksl</u>¹, J. urišin², N. Jasminská³, T. Brestovi ³, K. Šu ová¹, M. Šuliková⁴, Y. Katuna⁴, Z. Mol anová⁴, M. Fejer ák¹

¹ Institut of Materials Research, Slovak Academy of Sciences, Košice, Slovak Republic ² Department of Technologies in Electronics, Faculty of Electrical Engineering and Informatics, Technical University of Košice, Košice, Slovak Republic

³ Department of Power Engineering, Faculty of Mechanical Engineering, Technical University of Košice, Košice, Slovak Republic

⁴ Faculty of Sciences, Institute of Physics, Pavol Jozef Šafárik university in Košice, Košice, Slovak Republic

1300

Parallel Session 2

Accademia

Nanostructured Materials I Chair: E. Tamburri

11³⁰ **[ID-423] (Invited)** Stability and deformation behaviour of nanocrystalline high entropy alloys.

B.S. Murty IIT Madras

12⁰⁰ [ID-100] Mechanical properties of nanostructured materials embedded with nanotwins.

N.R. Tao, F.K. Yan, B.B. Zhang

Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

12¹⁵ [ID-128] Interface-modulated strengthening ability of nanoscale Cu/Au multilayers.

X. Li, <u>G-P Zhang</u>

Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

12³⁰ [ID-174] Enhancing the wettability of nano-scale Cu thin film on ZnO substrate by gas additives: A density-functional study.

E-A Choi, J. Yun, S.Z. Han

Computational materials research group, Korea Institute of Materials Science

ISMAN

12⁴⁵ **[ID-41]** Tribological and corrosion property of Fe-based metallic glass nanocomposite coatings synthesized by thermal spraying.

A. Kumar¹, S.K. Nayak¹, P.K. Bijlawan ², A. Banerjee², M. Dutta², <u>T. Laha</u>¹ ¹ Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Kharagpur, India

² Research and Development Division, Tata Steel, Jamshedpur, India

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Parallel Session 3 Taurini

Advanced Preparation and Processing Techniques I Chair: A. Calka

11³⁰ **[ID-382] (Invited)** Rapid solidification of AlSi₁₀Mg + Cu mixed powders by single track laser melting and melt spinning.

S. Marola¹, D. Gianoglio¹, <u>L. Battezzati</u>¹, M. Lorusso², D. Manfredi², F. Bosio³, A. Aversa³, M. Lombardi³

- ¹ Università di Torino
- ² Center for Sustainable Future Technologies, Istituto Italiano di Tecnologia
- ³ Politecnico di Torino
- 12⁰⁰ **[ID-421]** Al-Si-Ni-Cr-Fe alloy prepared by selective laser melting: microstructure and mechanical properties.

<u>G. Cattano</u>¹, R. Zhang², M. Lombardi¹, P. Fino¹, N. Birbilis² ¹ Politecnico di Torino ² Monash University

12¹⁵ [ID-422] Mechanical alloying and spark plasma sintering of nanostructured CuCrFeTiMn(Ni) high-entropy alloys.

N. Shkodich¹, S. Vadchenko¹, A. Rogachev¹, I. Kovalev¹, G. Trusov² ⁷ ISMAN ² MISiS

12³⁰ **[ID-385]** Processes involved during nanostructured material production by pulsed laser ablation in liquid.

<u>A. Santagata</u>¹, A. Guarnaccio¹, A. De Bonis², R. Teghil², M. Dell'Aglio³, A. De Giacomo⁴

¹ CNR-ISM, Division of Ultrafast Processes in Materials (FLASHit)

² Dipartimento di Scienze, Università della Basilicata

⁴ Università di Bari, Dipartimento di Chimica

³ CNR-Nanotec, Bari

ISMANAM Rem 2018

12⁴⁵ **[ID-149]** Cooling strategies for droplet solidification of glass forming alloys.

<u>N. Ciftci</u>, N. Ellendt, L. Mädler, V. Uhlenwinkel Leibniz Institute for Materials Engineering IWT, Bremen, Germany

13⁰⁰ **[ID-244]** Improvement of plasticity of Cu₅₀Zr₄₅Al₅ bulk metallic glasses by addition of Zr or Ta crystalline particles.

J-M Pelletier¹, J-M Cardinal¹, F. Mercier¹, J. Qiao², G.Q. Xie³

¹ MATEIS, INSA-Lyon

² School of Mechanics, Civil Engineering and Architecture, Northwestern Polytechnical University, Xi'an, P.R. China

³ Shenzhen Graduate School, Harbin Institute of Technology, Shenzhen, P.R. China

Parallel Session 4 Caudini

Crystallization processes I and Mechanical Properties I Chair: E. S. Park

11³⁰ **[ID-52] (Invited)** Tailoring nanocrystallization to break the speed limit of phasechange memory.

E.Ma

Johns Hopkins University

12⁰⁰ **[ID-332]** Influence of citrate and other small dicarboxylic acids on hydroxyapatite nanocrystal nucleation, growth and surface properties.

L. Esposti¹, F. Carella¹, A. Adamiano¹, A. Tampieri¹, J. Delgado-López², H. Amenitsch³, M. Lafisco¹

¹ ISTEC - C.N.R.

² University of Granada, Department of Inorganic Chemistry

³ Graz University of Technology

12¹⁵ **[ID-330]** Controlling the Curie temperature in amorphous glass coated microwires by heat treatment.

<u>A. Dzhumazoda</u>, L. Panina, M. Nematov, A. Adam, A. Ukhasov, A. Morchenko, F. Tabarov, N. Yudanov

National University of Science and Technology, MISiS, Moscow, Russian Federation

12³⁰ [ID-55] (Invited) Nano indentation creep response of FeCoNiCrMnAl high entropy alloys over 300 to 600 °C.

J.Huang City University of Hong Kong

13⁰⁰ **[ID-119]** Creep testing of woven fabric flax-polypropylene composite using digital correlation image (DIC).

R.Z. Messadi, H. Nouri, T. Hassine, M-F Lacrampe, H.B. Daly

13¹⁵ Lunch

MONDAY 2 July AFTERNOON

Auditorium

narv svstem.

Chair: G. Andreozzi

14³⁰ OUTREACH EVENT - From Penrose tiling to Siberian glaciers: The extraordinary search for natural guasicrystals. Luca Bindi, Firenze University, Italy Parallel Session 1 Auditorium Metallic Glasses II Chair: J. Bhatt 15⁴⁵ **[ID-470] (Invited)** Microporous metals by De-alloying of glasses. T. Spassov, L. Mihaylov, A. Inoue Faculty of Chemistry and Pharmacy University of Sofia "St. Kl. Ohridski" 16⁰⁰ [ID-201] Glass formation adjacent to the intermetallic compounds in Cu-Zr bi-

Y. Wang, J. Yao, Y. Li Institute of Metal research, Chinese Academy of Science

16¹⁵ [ID-284] A novel micro-casting process for mass production of metallic glasses microparts.

S. Gravier¹, A. Lenain¹, X. Cerutti¹, J-J Blandin², G. Kapelski², R. Daudin² ¹ Vulkam Inc. Amorphous metal micro casting / Saint-Martin d'Hères, France ² Science et Ingénierie des Matériaux et Procédés, Univ. Grenoble Alpes CNRS / Grenoble INP. Saint-Martin d'Hères. France

16³⁰ [ID-400] Quasicrystal-induced nucleation in a bulk glass forming Mg-Zn-Yb liquid.

G. Kurtuldu, K.F. Shamlaye, J.F. Löffler

16⁴⁵ [ID-234] Impact of alloying on properties and oxidation resistance of magnetron sputtered Zr–Hf–Cu based metallic glasses.

M. Zitek, P. Zeman, M. Kotrlova, R. Cerstvy University of West Bohemia

Parallel Session	2
Accademia	

Nanostructured Materials II Chair: B.S. Murthy

15³⁰ [ID-125] Evolution of nanoeutectic and phase stability in CoCrFeNiNb_x (0.45 \leq x \leq 0.65) high entropy alloys.

B. Chanda, J. Das

15⁴⁵ **[ID-139]** Abnormal grain growth mediated by fractal boundary migration at the nanoscale.

C. Braun¹, R. Zeller², H. Menzel¹, N. Boussard¹, J. Schmauch¹, K. Emil², R. Birringer¹ ⁷ Saarland University ² Ulm University

16⁰⁰ **[ID-236]** Phase evolution and thermal stability of mechanically alloyed AlCo-CrFeNiMn high entropy alloy.

V. Shivam, J. Basu, Y. Shadangi, M. Singh, N. Mukhopadhyay Indian Institute of Technology (BHU); Varansi

16¹⁵ **[ID-222]** Development of shape memory NiTi-based nanoparticles.

J-Y Kim, S-Y Kim, S-J Kim, W-H Ryu, E-S Park Seoul National University

16³⁰ [ID-237] Solid solutions of Ti-Zr-S as low-dimensional semiconductors with controllable bandgap.

D. Muratov¹, V. Vanyushin¹, D. Kuznetsov¹, A. Sinitskii², P. Jukova¹, T. Martynova¹ ⁷ NUST MISiS ² University of Nebraska-Lincoln

16⁴⁵ [ID-245] Monte Arci obsidian: a fascinating nanocomposite for archaeometry and material science.

<u>V. Mameli</u>¹, A. Musinu¹, D. Niznansky², D. Peddis³, G. Ennas¹, A. Ardu¹, C. Lugliè¹, C. Cannas¹

- ¹ Università degli Studi di Cagliari
- ² Charles University of Prague

³ CNR - ISM

Parallel Session 3 Taurini

Advanced Preparation and Processing Techniques II Chair: : A. Santagata

ISMANAM Rem 2018

15 ³⁰	[ID-453] (Invited) Nanodiamond /polymer composites: from materials design to 3D manufacturing.
	<u>E. Tamburri, M. Angjellari, M.L. Terranova</u> Dipartimento di Scienze & Tecnologie Chimiche - MinimaLab, Università di Roma "Tor Vergata"
16 00	[ID-24] (Invited) Alloy development for additive manufacturing processes.
	P.K. Gokuldoss Norwegian University of Science and Technology, Gjøvik, Norway
16 ³⁰	[ID-108] Development of medium-low density TiAlVCrX high entropy alloy.
	Y.C. Liao ¹ , T.H. Li ¹ , S.M. Song ¹ , P. H. Tsai ¹ , J.S.C. Jang ¹ , J.C. Huang ^{2,3} ¹ Department of Mechanical Engineering and institute of Materials Science and Engineering, National Central University ² Department of Materials and Optoelectronic Science, National Sun Yat-Sen University ³ Institute for Advanced Study: Department of Materials Science & Engineering, City University
	of Hong Kong
16 ⁴⁵	[ID-394] Generation of 3-D functional ceramics by biomorphic transformation of highly reactive inorganic precursors.
	A. Tampieri, <u>S. Sprio</u> , A. Ruffini Institute of Science and Technology for Ceramics, National Research Council
	Parallel Session 4 Caudini
	Crystallization processes II Chair: E. Ma
15 ³⁰	[ID-416] (Invited) Abnormal relaxation behavior via disordered clusters in glass forming liquid
	C-W- Ryu ¹ , J-W Kim ¹ , T. Ishikawa ² , G-W Lee ³ , K.F. Kelton ⁴ , <u>ES. Park¹</u> ¹ Seoul National University ² Japan Aerospace Explanation Agency
	 ³ Korea Research Institute of Standards and Science ⁴ Washington University
16 00	 ³ Korea Research Institute of Standards and Science ⁴ Washington University [ID-449] How to describe atomic arrangements of disordered structures.
16 ⁰⁰	 ³ Korea Research Institute of Standards and Science ⁴ Washington University [ID-449] How to describe atomic arrangements of disordered structures. <u>K. Nishio, T. Miyazaki</u> National Institute of Advanced Industrial Science & Technology

ISMANAM Rum 2018

16¹⁵ [ID-305] Structural characterization of amorphous FeZr by EXAFS.

<u>P.E. Jönsson</u>, G. Muscas, G. Sebastian, I.G. Serrano, R. Johansson, V.K. Mutta, R. Scheicher

Department of Physics and Astronomy, Uppsala University, Sweden

16³⁰ [ID-307] The thermal stability and nucleation dynamics of metallic glasses via ultrafast Flash DSC.

J. Perepezko, M. Gao

University of Wisconsin-Madison

16⁴⁵ **[ID-296]** The anomalous breakdown of the Stokes-Einstein relation in Ge-Sb-Te and Ag-In-Sb-Te alloys and its connection to fast crystallization in the super-cooled liquid.

<u>S. Wei</u>¹, C. Persch¹, Z. Evenson¹, M. Stolpe³, G. Coleman⁴, P. Lucas⁴, C.A. Angell⁵, M. Wuttig¹

¹ RWTH Aachen University. I. Institute of Physics (IA)

² Maier-Leibnitz Zentrum (MLZ), Technische Universität München

³ Heraeus Holding GmbH, Germany

- ⁴ University of Arizona, Dept. of Materials Sci & Engineering
- ⁵ Arizona State University, School of Molecular Sciences

17⁰⁰ Coffee Break

- 17³⁰ Poster Session I
- 18³⁰ Close of day two

Metallic Glasses Chair: J. Bhatt

[ID-34]	HS. Wang	Effects of the initial welding temperature on the microstructure and proper- ties of laser spot-welded Zr-Al-Co-Ta bulk metallic glass
[ID-38]	A.H. Taghvaei	Characterization of soft magnetic Fe-based bulk glassy/composite cores with high thermal stability prepared by powder metallurgy.
[ID-61]	W. Pilarczyk	Structure and nanomechanical properties of amorphous welds produced at reduced temperature.
[ID-62]	R. Babilas	Structural and electrochemical study of resorbable $Ca_{_{32}}Mg_{_{12}}Zn_{_{38}}Yb_{_{18-x}}B_x$ (x = 1,2,3) metallic glasses in Ringer's solution.
[ID-86]	H.S. Hwan	Viscous flow and deformation behaviors on supercooled liquid region of Ti-based bulk metallic glass composites containing spherical B2 particles.
[ID-87]	B. Liu	Variations of electrical resistivity in Zr- and Ti-based metallic glasses with glass-to-quasicrystalline transformation.
[ID-183]	M. Churyukanova	Investigation of structure and thermal properties in composite materials from metallic glasses with small addition of polytetrafluoroethylene.
[ID-187]	P. Błyskun	Chemical composition and various oxygen impurity levels influence on ther- mal properties and critical diameter of Zr., Cu., Al., Ag alloys,

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[ID-208]	D. Park	Design of a modular measurement system for combinatorial development of metallic glasses.
[ID-214]	J.Y. Kim	Correlation between intrinsic properties and deformation behavior of na- noscale metallic glasses.
[ID-254]	A. Bondarev	Monte Carlo simulation of magnetic phase diagrams of amorphous alloys based on rare-earth metals.
[ID-256]	O. Florencio	Morphological characterization of $Cu_{_{47,75}}Zr_{_{47,75}}Al_{_{4,5}}$ and $Cu_{_{47,5}}Zr_{_{45,5}}Al_5Er_2$ bulk metallic glasses.
[ID-259]	H.S. Ahn	Relationship between the mechanical properties and structural changes in Ni-(Ti, Zr, Nb, Ta) glass-forming system.
[ID-264]	C. Codrean	Synthesis and characterization of bulk amorphous steel using industrial ferroalloys.
[ID-279]	JS. Park	Interfacial microstructural and mechanical properties of Ti / SUS dissimilar joints by brazing with Zr-Ti metallic glass filler.
[ID-306]	V. Semina	Swelling and structural changes in metallic glasses under swift lon irradiation.
[ID-318]	R. Risti	Electronic structure and transport properties of $(\text{TiZrNbCu})_{1\cdot x}\text{Ni}_x$ metallic glasses.
[ID-427]	K. Kim	Abnormal T_{g} variation in Zr-rich Zr-TM binary metallic glasses.
[ID-448]	M. Hasiak	Microstructure to magnetic properties relationship in amorphous and par- tially crystallized Fe-Co-Si-B-Mo-P alloy.
[ID-473]	M. Samavatian	Effects of Nb minor addition on the microstructure and GFA of ZrCuAlNi bulk metallic glass.
[ID-474]	D.P. Cabarcas	Phase formation and structural evolution during annealing of FeSIBPCu amorphous alloys.
[ID-479]	I. Janotová	Preparation and properties of intermetallic low temperature MnBi phase.
[ID-503]	G.C. Rocco	Effect of substitution of La and Ce by Misch-metal on the glass-forming ability and thermal stability of a La-Ce-Al-Co metallic glass.
Cryst	allization process	es
Chair	r: L. Degli Espositi	
[ID-137]	S. Hiroaki	The crystallization process of Fe based amorphous alloy.
[ID-231]	D. You	Prediction of formation energies of interstitial atoms in HCP crystals.
[ID-272]	I.H. Kim	A study of undercooling behavior of W-Ta binary alloys in ultra-high tem- perature using electrostatic levitation equipment.

- [ID-291] Z. Molčanová Crystallization at room temperature from amorphous to tetragonal MgGa single phase.
- [ID-381] A. Aronin Comparative analysis of the transient nucleation behavior in the Fe40Ni-40P14B6 and Fe40Co40P14B6 glasses.

[ID-433] *M. Behulova* Experimental determination of the nuclei number in the deeply undercooled and rapidly solidified powder particles of the high-alloyed steel.

Mechanical Properties

Chair: G. Barucca

[ID-23] Y. B. Jeong

The microevolution of mechanical properties and microstructure in Febased high strength alloys with addition of immiscible elements

[ID-56]	L. Campanelli	Fatigue response of the metastable Ti15Mo and Ti12Mo6Zr2Fe alloys treated above beta transus.
[ID-57]	K.H. Song	Microstructure and mechanical properties of solid state welded steels.
[ID-58]	K.H. Song	Anisotropic mechanical behavior of additive manufactured AISI 316L steel.
[ID-76]	H. Adil	Microstructure characterization and mechanical properties of $\rm Al_{13.5}Mg_7Si_2Cu$ alloy produced by rapid solidification and hot extrusion.
[ID-104]	R.M. Sánchez	Influence of Mg additions, hot-extrusion, cold-rolling and artificial aging on microstructure and hardness of 2024 alloy.
[ID-105]	R.M. Sánchez	Microstructural characterization of Al-Cu-Mg-WC composites produced by mechanical alloying and sintering process.
[ID-145]	N. Haque	Mechanical properties of rapidly solidified Ni3Ge and Ni5Ge3 intermetallic compounds.
[ID-157]	M. Kishchik	Effect of multi-directional forging on microstructure and mechanical properties of AI-Mg based alloy
[ID-178]	H. Jeong	Interface characteristics of a Cu/Nb Clad Mg2B composite wire through deformation modes.
[ID-185]	V. Zadorozhnyy	Self-reinforced composite materials based on ultra-high molecular weight polyethylene fibers.
[ID-197]	W. Ż órawski	The microstructure and mechanical properties of Ni20Cr cold sprayed coatings.
[ID-207]	I. Oh	Development of Ion-irradiation resistant W-based alloys for fusion application.
[ID-281]	M. Nikitina	Fatigue behavior of ultrafine-grained ferritic/martensitic steel, produced by equal-channel angular pressing.
[ID-292]	P. Kaboyi	Effect of aluminium on superplastic behavior and deformation mechanisms of two-phase brass.
[ID-322]	T.W. Lee	Microstructural and mechanical evaluation of Nb-silicide based in-situ composite at ultrahigh-temperature.
[ID-364]	Y.S. Kim	\mbox{Effect} of Nb on microstructure and mechanical properties of Ti-based ultra-fine eutectic composites.
[ID-373]	M. Abas	Investigation the mechanical properties of AI–Si alloys by nanoindentation.
[ID-428]	A. Mahendradhany	Ductile martensitic steel by introducing carbon heterogeneity via ultrafast heat treatment.
[ID-431]	F.Milovich	Anisotropy of the mechanical properties of crystals partially stabilized zirconia.



TUESDAY 3 JULY

MORNING

08⁴⁵ PLENARY – Smart magnetism: nanomaterials design for friction less transport, refrigeration and theranostics.

Michael Farle, Universitat Duisburg-Essen, Germany Auditorium Chair: D. Fiorani

> Parallel Session 1 Auditorium

Nanostructured Materials III Chair: P.S. Normile

10⁰⁰ **[ID-175] (Invited)** Tuneable single-phase magnetic behavior in chemically synthesized $AFeO_3$ -BF₂O₄ (A = Bi or La, B = Co or Ni) nanocomposites.

T. Sarkar¹, G. Muscas², G. Barucca³, G. Varvaro⁴, D. Peddis⁴, R. Mathieu¹

¹ Department of Engineering Sciences, Uppsala University, Uppsala, Sweden

² Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden

³ Dipartimento di Scienze e Ingegneria della Materia, dell'Ambiente ed Urbanistica, Università Politecnica delle Marche, Ancona, Italy

⁴ Istituto di Struttura della Materia – CNR, Monterotondo Scalo (RM), Italy

10³⁰ [ID-246] Bimagnetic spinel ferrite core-shell nanoparticles for magnetic fluid hyperthermia.

<u>M. Sanna Angotzi</u>¹, V. Mameli ¹, C. Cara¹, A. Musinu¹, A. Ardu¹, D. Niznansky², H. Xin³, C. Cannas¹

H. XIN°, C. Cannas

- ¹ University of Cagliari
- ² Charles University of Prague

³ Brookhave National Laboratory

10⁴⁵ **[ID-420]** The effect of Zn-substitution on magneto-structural properties of cobalt ferrite nanoparticles.

S. Jovanovi^{1,2}, D. Peddis³, N. Yaacoub⁴, M. Vukomanovi¹, M. Spreitzer¹

¹ Advanced Materials Department, Jožef Stefan Institute;

² Laboratory of Physics, Vin a Institute of Nuclear Sciences, University of Belgrade

- ³ Istituto di Struttura della Materia-CNR, Monterotondo Scalo (RM)
- ⁴ LUNAM, Université du Maine, Institut des Molécules et Matériaux du Mans CNRS UMR-6283

Parallel Session 2 Accademia

Metallic Glasses III Chair: K. Kelton



10⁰⁰ **[ID-363] (Invited)** Atomistic details of ductility and structural relaxation from STZ Spectra.

M. Atzmon¹, L. Tianjiao¹, L.R. DaCosta¹, Y. Sun², L. Greer³, W-H Wang⁴

¹ University of Michigan, Ann Arbor, MI, USA

² Institute of Physics, Chinese Academy of Science

³ Department of Materials Science & Metallurgy, University of Cambridge

⁴ Chinese Academy of Sciences

10³⁰ [ID-194] Identifying the structural building blocks of metallic glasses using machine learning.

J. Maldonis¹, A.D. Banadaki², S. Patala², P.M. Voyles³

¹ University of Madison, Wisconsin

² North Carolina State University

³ University of Wisconsin-Madison

10⁴⁵ **[ID-200]** Shear bands formation and plasticity of metallic glasses under laser shock peening.

B. Wei

Key Laboratory of Microgravity (National Microgravity Laboratory), Institute of Mechanics, Chinese Academy of Sciences

> Parallel Session 3 Taurini

Materials for Renewable Energy I Chair: L. Da Monte

10⁰⁰ **[ID-387]** Engineered nano-structured thin films for thermionic-photovoltaic energy conversion at ultra-high temperatures.

A. Bellucci¹, M. Mastellone¹, M. Girolami¹, A. Generosi¹, B. Paci¹, A. Mezzi², S. Kaciulis², R. Polini³, S. Orlando¹, V.Valentini¹, <u>D.M. Trucchi⁴</u>

² CNR-ISMN

³ Dip. di Scienze Tecnologie Chimiche, Univ. di Roma "Tor Vergata" Conscielle Nazionale della Biagrada

⁴ Consiglio Nazionale delle Ricerche

10¹⁵ **[ID-182]** The influence of nonstoichiometry on the optical and catalytic properties of titania nanotubes.

<u>A. Valeeva^{1,2},</u> I. Dorosheva², A. Vokhmintsev², R. Kamalov², E. Kozlova³, D. Selishchev³, I. Weinstein², A. Rempel^{1,2}

¹ Institute of Solid State Chemistry, Ural Branch, Russian Academy of Sciences

- ² Ural Federal University, Research and Educational Center NANOTECH
- ³ Boreskov Institute of Catalysis, Siberian Branch, Russian Academy of Sciences

10³⁰ **[ID-192]** ZnO-Fe₂O₃ and ZnO-WO₃ nanoheterostructures: from synthesis to application in photoelectrochemical water splitting.

<u>D. Barreca</u>¹, A. Gasparotto², C. Maccato², C. Sada³, K. Kaunisto^{4,5}, S. Bals⁶, T. Altantzis⁶

⁷ CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, Padova, Italy

² Department of Chemical Sciences, Padova University and INSTM, Padova, Italy

³ Department of Physics and Astronomy, Padova University and INSTM, Padova, Italy

⁴ Department of Chemistry and Bioengineering, Tampere University of Technology, Tampere, Finland;

⁵ VTT Technical Research Centre of Finland Ltd, Tampere, Finland

⁶ EMAT, University of Antwerp, 2020 Antwerpen, Belgium

10⁴⁵ **[ID-505]** A solution-processed tetra-alkoxylated zinc phthalocyanine as hole transporting material for perovskite solar cells.

<u>G. Zanotti¹</u>, G. Mattioli¹, S. Notarantonio¹, A.M Paoletti¹, G. Pennesi¹, D. Caschera², N. Maman^{3,4}, I. Visoly-Fisher^{3,4}, R.K. Misra⁵, L. Etgar⁵, E.A. Katz^{3,4}

1 Istituto di Struttura della Materia (ISM) - CNR, Via Salaria km 29.300, 00015 Monterotondo (Rm), Italy.

² Istituto per lo Studio dei Materiali Nanostrutturati (ISMN) - CNR, Via Salaria km 29.300, 00015 Monterotondo (Rm), Italy.

³ Department of Solar Energy and Environmental Physics, Swiss Institute for Dryland Environmental and Energy Research, Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Midreshet Ben-Gurion 8499000, Israel.

⁴ Ilse-Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, 84105 Be'er Sheva, Israel

⁵ Center for Applied Chemistry, The Institute of Chemistry, The Hebrew University of Jerusalem, Jerusalem, Israel

> Parallel Session 4 Caudini

Porous Materials I Chair: G. Muscas

10⁰⁰ **[ID-179]** Nano-porous palladium used in hydrogen energy areas.

X. Du¹, L. Shao², Z. Yang², X. Ye¹, C. Chen¹

¹ Institute of Materials, China Academy of Engineering Physics ² Institute of Solid Mechanics, Beihang University

10¹⁵ **[ID-190]** Functionalised nanoporous gold as a new biosensor for quantitative detection in ultra-low concentrations.

<u>P. Rizzi</u>, F. Scaglione, E. Alladio, F. Turci, A. Damin, S. Bordiga, C. Giovannoli, L. Battezzati

Dipartimento di Chimica, Università di Torino

10³⁰ [ID-469] Stimuli-responsive drug delivery systems based on mesoporous silica.

V. Zelenak¹, E. Benova², M. Almasi², A. Zelenakova³, V. Hornebecq⁴

¹ Department of Inorganic Chemistry, University of P.J. Safarik

² Institute of Chemistry, Faculty of Science, P.J. Šafárik University, Košice, Slovakia

³ Institute of Physics, Faculty of Science, P.J. Šafárik University, Košice, Slovakia

⁴ 3Aix Marseille University, CNRS, MADIREL, Marseille, France

10⁴⁵ **[ID-464]** Silica nanosystems for active antifouling protection: nanocapsules and mesoporous nanoparticles in controlled release applications.

L. Ruggiero¹, A. Sodo¹, F. Zurlo², E. Di Bartolomeo², A.Talone^{1,3}, D. Peddis³, M.A. Ricci¹

¹ Dipartimento di Scienze, Università degli Studi "Roma Tre"

² Dipartimento di Scienze Chimiche e Tecnologie, Università degli Studi di Roma "Tor Vergata"
³ CNR - ISM

11⁰⁰ Coffee Break

Parallel Session 1 Auditorium

Nanostructured Materials IV Chair: T. Sarkar

11³⁰ **[ID-499] (Invited)** Demagnetizing field corrections and packing-fraction distribution in magnetic nanoparticle assemblies.

P. S. Normile¹, M. S. Andersson², R. Mathieu², S. S. Lee³, G. Singh⁴, J. A. De Toro¹ ⁷ Instituto Regional de Investigación Científica Aplicada (IRICA) and Departamento de Física Aplicada, Universidad de Castilla-La Mancha, Spain

² Department of Engineering Sciences, Uppsala University, Sweden

³ Institute of Bioengineering and Nanotechnology, Singapore

⁴ Department of Materials Science and Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

12⁰⁰ **[ID-475]** Superspin glass and exchange bias behaviour of a dense assembly of ultra-small Mn ferrite nanoparticles: Monte Carlo simulations study.

<u>M Vasilakaki</u>¹, G. Margaris¹, D. Peddis², R. Mathieu³, N. Yaacoub⁴, D. Fiorani^{2,5}, K. Trohidou¹

¹ Institute of Nanoscience and Nanotechnology, NCSR "Demokritos,"

² Istituto di Struttura della Materia-CNR

- ³ Department of Engineering Sciences, Uppsala University
- ⁴ LUNAM, Université du Maine, Institut des Molécules et Matériaux du Mans CNRS

⁵ Center of Nanomaterials Research, Immanuel Kant Baltic Federal University

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12¹⁵ **[ID-240]** In-situ XAS study of real–time schlenk line synthesis hollow γ -Fe₂O₃ nanoparticles using synchrotron beam at the advanced photon source.

S. Chattopadhyay¹, S-G Kwon², T. Shibata³, E. Shevchenko⁴

- ¹ Elgin Community College
- ² Seoul National University
- ³ Kennametal, Inc
- ⁴ Argonne National Laboratory
- 12³⁰ [ID-412] Tayloring the coercivity of Sm-Co-Cu thin films with variation of the copper content.

<u>M. de Campos</u>¹, S. Romero², T. Germano² ⁷ Federal Fluminense University ² Physics Institute - University of Sao Paulo

- 12⁴⁵ **[ID-54]** Engineered Gd-Co based multilayer stack to enhanced magneto-caloric effect and relative cooling power.
 - <u>M. Tadout</u>¹, C.H Lambert², MS El Hadri², O. Mounkachi³, A. Benyoussef³, M. Hamedoun³, M Benaissa¹, S. Mangin²

¹ Laboratoire de Matière Condensée et Sciences Interdisciplinaires (LaMCScI), Faculty of Science-Mohammed V University, Rabat, Morocco

² Institut Jean Lamour, UMR CNRS, Université de Lorraine, Nancy, France

³ Materials and Nanomaterials Centre, Moroccan Foundation for Advanced Science, Innovation and Reserarch, MAScIR, Rabat, Morocco

Parallel Session 2 Accademia

Metallic Glasses IV Chair: B. Sarac

11³⁰ **[ID-82]** Metallic glasses/composites prepared by powder metallurgy route and their mechanical properties.

D. Wang

School of Materials Science and Engineering, Harbin Institute of Technology

11⁴⁵ **[ID-110]** The evolution of ZrCu precipitation and mechanical properties improvement of the Zr-Cu-Al-Co bulk metallic glass composite by inoculating with Ta particles.

<u>P. H. Tsai</u>¹, Y. C. Liao², S. M. Song¹, T. H. Li¹, Y. L. Jian¹, J. S. C. Jang^{1,2}, J. C. Huang^{3,4}

¹ Institute of Materials Science and Engineering, National Central University

² Department of Mechanical Engineering, National Central University

³ Department of Materials and Optoelectronic Science, National Sun Yat-Sen University

⁴ Institute for Advanced Study; Department of Materials Science & Engineering, City University of Hong Kong

12⁰⁰ [ID-121] Microstructure and mechanical properties of metallic nanoglasses prepared by nanoparticle consolidation.

O. Adjaoud, K. Albe

Institute of Materials Science, Technische Universität Darmstadt

12¹⁵ **[ID-334]** Atomic structure and mechanical behavior of amorphous TiNiCu alloy processed by severe plastic deformation.

A. Churakova^{1,2,3}, E. Boltynjuk², D. Gunderov^{1,2,3}, E. Ubyivovk², A. Kilmametov⁴, Y. Golovin^{5,6}, A. Tyuri⁵, R. Valiev^{1,2}

¹ Saint Petersburg State University; Ufa State Aviation Technical University; Institute of Molecule and crystal physics RAS

² Ufa State Aviation Technical University

³ Institute of Molecule and crystal physics RAS

⁴ Karlsruhe Institute of Technology, Institute of Nanotechnology

⁵ Research Institute for Nanotechnologies and Nanomaterials, Derzhavin State University;

⁶Chemical Department, M.V. Lomonosov Moscow State University

12³⁰ ID-346] FeCoNi(CrSi) high entropy alloy with good soft magnetic and mechanical properties.

F. Li

School of Materials Science and Engineering, Zhengzhou University

12⁴⁵ [ID-243] Tensile creep and physical mechanism in $Cu_{46}Zr_{46}AI_8$ and $La_{60}Ni_{15}AI_{25}$ metallic glasses.

J. Qiao¹, <u>J-M Pelletier</u>², Y. Yao¹

¹ School of Mechanics, Civil Engineering and Architecture, Northwestern Polytechnical University, Xi'an 710072, P.R. China
² MATEIS, INSA-Lvon

> Parallel Session 3 Taurini

Materials for Renewable Energy II Chair: S. Fabbrici

11³⁰ [ID-492] (Invited) Thermo-magnetic phase transitions and magnetocaloric materials.

V. Franco, A. Conde, J.Y. Law J.Y.

Dpto. Física de la Materia Condensada, ICMSE-CSIC, Universidad de Sevilla



12⁰⁰ [ID-67] Assessing two rapid quenching techniques for the production of magnetocaloric alloys.

G. Potnis¹, J. Das¹, M. Krautz², <u>A. Gebert³</u>, A. Waske², J. Eckert⁴ ¹ Department of Metallurgical and Materials Engineering, Indian Institute of Technology Kharagpur ² Leibniz Institute for Solid State and Materials Research ³ IFW Dresden ⁴ Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria

12¹⁵ [ID-126] Experimental study of Curie temperature distributions on mechanically alloyed Fe₇₀Zr₃₀ systems: effect on magnetocaloric response and magnetic properties.

<u>A.F. Manchón-Gordón</u>, J.J. Ipus, L.M. Moreno-Ramírez, J.S. Blázquez, C.F. Conde, V. Franco, A. Conde *Universidad de Sevilla*

12³⁰ **[ID-383]** Influence of atomic disorder on the ground state of Ni-Co-Mn-Sn alloys with regular and inverse Heusler structures: ab initio study.

<u>V. Buchelnikov</u>¹, V. Sokolovskiy¹, M. Zagrebin¹, B. Barbiellin², O. Miroshkina¹ ¹Chelyabinsk State University, Chelyabinsk, Russia ²Lappeenranta University of Technology, Lappeenranta, Finland

12⁴⁵ **[ID-426]** Development of Fe-rich soft magnetic metallic glass matrix composite utilizing nucleation seed.

K.J. Kim, K.N. Yoon, W. Kim, E.S. Park Seoul National University

> Parallel Session 4 Caudini

Porous Materials II Chair: M. Ferretti

11³⁰ **[ID-249]** Wollastonite: synthesis and additive manufacturing of porous-controlled scaffolds.

M.C. Luna¹, M. Horynová¹, E.B. Montúfar¹, J. Torres-Rodríguez², L. Celko¹ ⁷ Central European Institute of Technology - Brno University of Technology ² Central European Institute of Technology 11⁴⁵ **[ID-341]** Silica aerogels – fabrication, properties and overcoating with diamond thin film.

<u>J. Torres-Rodríguez</u>¹, M. Varga², A. Kromka³, E.B. Montúfar¹, I. Lázár⁴, J. Kalmár⁴, K. Dvořák⁵, L. Celko¹

¹ Central European Institute of Technology - Brno University of Technology

² Institute of Physics, Czech Academy of Sciences

³ Institute of Physics of the ASCR

⁴ Department of Inorganic and Analytical Chemistry, University of Debrecen

⁵ Brno University of Technology, Faculty of Civil Engineering

12⁰⁰ **[ID-43]** Behavior of cementitious materials with mineral additions towards the transport of ionic species: application to electrokinetic remediation processes.

I. Martínez, M. Castellote IETcc-CSIC

12¹⁵ [ID-96] Three-dimensional bicontinuous nanoporous materials by vapor phase dealloying.

Z. Lu¹, P. Liu², A. Hirata¹, J. Erlebacher³, M. Chen³, J. Han⁴

¹ Mathematics for Advanced Materials-OIL

² State Key Laboratory of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University

³ Department of Materials Science and Engineering, The Johns Hopkins University

⁴ Advanced Institute for Materials Research

12³⁰ **[ID-204]** Using a unique complex surface treatment, sand-blasting/acid-etching/ alkaline-immersion, to enhance the corrosion resistance and biological responses of titanium surface.

Y-S Sun¹, H-H Kao², H-H Huang¹

¹ Department of Dentistry, National Yang-Ming University, Taiwan ² Institute of Oral Biology, National Yang-Ming University, Taiwan

12 ⁴⁵	
13 00	Lunch



TUESDAY 3 JULY

14 ³⁰	KEYNOTE – Combinatorial and high-throughput methods for the investigation of novel materials. Alfred Ludwig, Ruhr-University Bochum, Germany <i>Auditorium</i> Chair: M. Farle
	Parallel Session 1 Auditorium
	Nanostructured Materials V Chair: B.S. Murthy
15 ³⁰	[ID-498] (Invited) Reversible sodium and lithium insertion in iron fluorides.
	M-L Doublet ¹ , E. Kemnitz ² , <u>N. Pinna</u> ² ¹ Institut Charles Gerhardt, CNRS UMR5253, Université Montpellier, France; Réseau Français sur le Stockage Electrochimique de l'Energie, Amiens, France ² Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Germany
16 ⁰⁰	 [ID-40] BN/Ag nanohybrids with enhanced catalytic activity. <u>A. Konpatsky</u>¹, K. Firestein², D. Leybo¹, A. Steinman¹, A. Kovalskii¹, A. Matveev¹, <u>A. Manakhov¹, D. Golberg², D. Shtansky¹</u> ¹ National University of Science and Technology (NUST) "MISiS" ² School of Chemistry, Physics and Mechanical Engineering, Queensland University of Technology (QUT), Brisbane, Queensland 4000, Australia.
16 ¹⁵	[ID-233] Synthesis and characterization of Sn reinforced Al–Cu–Fe quasicrystal- line matrix nanocomposite by mechanical milling. Y. Shadangi ¹ , V. Shiyam ¹ , M. K. Singh ¹ , D. Verma ² , V. Balakrishnan ² , J. Basu ¹ ,
	K. Chattopadhyay ¹ , N. K. Mukhopadhyay ¹ ¹ Indian Institute of Technology (BHU), Varanasi, India ² Indian Institute of Technology Mandi
16 ³⁰	[ID-106] Nanosized tantalum powder reduced by magnesium gas from tantalum oxide.
	D-W Lee Korea Institute of Materials Science
16 ⁴⁵	[ID-230] Fabrication of porous titania (TiO_2) thin films with a high specific surface area using nano-cellulose and analysis of their characteristics.
	Y. Yoon ¹ , G. Yang ¹ , H. Noh ¹ , S. Kim ¹ , W. Lee ¹ , S. Lee ² ⁷ Sejong University ² National Institute of Forest Science

Parallel Session	2
Accademia	

Metallic Glasses V Chair: J.M. Pelletier

15³⁰ **[ID-258]** Evaluation of governing factors for mechanical properties in Ni-Transition metal binary metallic glasses.

H. Ahn¹, H. Oh¹, C. Ryu¹, E. Park²

¹ Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University,
² Seoul National University

15⁴⁵ **[ID-73]** Thermoplastic formability of biocompatible Ti- and Zr-based bulk metallic glasses.

<u>M. Calin</u>¹, S. Bera¹, P. Ramasamy², B. Sarac², J. Eckert² ¹ Leibniz-Institute for Solid State and Materials Research Dresden (IFW Dresden) ² Erich Schmid Institute of Materials Science, Austrian Academy of Sciences (ÖAW)

16⁰⁰ [ID-78] FeNi-based bulk metallic glasses with large plasticity and excellent soft magnetic properties.

B. Shen Southeast University

16¹⁵ [ID-88] Role of Yttrium addition on the improvement of the plasticity in the Cu-Zr-Ti system.

<u>O. Baulin</u>¹, D. Fabrègue¹, S. Gravier², S. Cazottes¹, M. Bugnet¹, B. Ter-Ovanessian¹, J-M Pelletier¹

¹ Mateis Laboratory - INSA Lyon ² SIMAP, GPM2 Grenoble

- 16³⁰ [ID-131] Origin of large plasticity and multiscale effects in FeNi-based metallic glass.
 - B. Sarac¹, Y.P. Ivanov², M. Stoica³, J. Eckert⁴
 - ¹ Erich Schmid Institute of Materials Science
 - ² University of Cambridge
 - ³ ETH Zurich
 - ⁴ Montanuniversität Leoben
- 16⁴⁵ **[ID-352]** Early plasticity in metallic glasses.

D. Tönnies, L. Tian, C.A. Volkert

Institute of Materials Physics, University of Göttingen

Parallel Session 3 Taurini

Materials for Renewable Energy III Chair: C. Maccato

 $\label{eq:ID-109} \begin{array}{l} \text{[ID-109] The effect of reactive surface area of Ni-Ba_{0.8}Sr_{0.2}Ce_{0.6}Zr_{0.2}Y_{0.2}O_{3-\delta} \\ \text{anodes on the performance of proton-conducting solid oxide fuel cell.} \end{array}$

K-T Hsu¹, S-M Song¹, P-H Tsai¹, Y-C Liao², <u>J.S. Jang^{1,2},</u> J-C Lin¹, S- Lee¹, I-M Hung³, C-S Hsi¹

Institute of Materials Science and Engineering, National Central University

² Department of Mechanical Engineering, National Central University

³ Department of Chemical Engineering and Materials Science, Yuan Ze University

15⁴⁵ [ID-141] Highly nanostructured doped NiCo₂O₄ nanowires as performing cathode materials for Li-O₂ cells.

D. Giacco¹, S. Brutti², A. G. Marrani¹

¹ Department of Chemistry, La Sapienza, University of Rome ² Dipartimento di Scienze, Università della Basilicata

16⁰⁰ **[ID-168]** Methanol oxidation on nanotubular PtCeO₂ composites.

C.F. Martínez Tovar, A. Robledo, J. Garcia Instituto Politécnico Nacional-Esiqie

16¹⁵ [ID-250] Effect of AICl₃ additive on Li-N-H hydrogen storage properties.

L. Albanesi¹, S. Garroni², F. Gennari¹, S. Enzo³, P. Nolis⁴, M. Baró⁵

¹ Centro Atómico Bariloche - Comisión Nacional de Energía Atómica

² University of Burgos

³ University of Sassari and INSTM

⁴ Servei de Ressonancia Magnetica Nuclear (SeRMN)

⁵ Departament de Fisica, Universitat Autonoma de Barcelona

16³⁰ [ID-260] Hydrogen storage and hydrolysis behaviors of core-shell structured Mg based nano composites synthesized through arc plasma method.

<u>J. Zou</u>, X. Zeng, W. Ding Shanghai Jiao Tong Universitv

16⁴⁵ [ID-72] Ni-Nb-Zr amorphous membranes: a study of crystallization and hydrogen solubility.

A. Paolone¹, O. Palumbo¹, F. Trequattrini², D. Chandra³ ¹ CNR-ISC ² Sapienza University of Rome ³ University of Nevad

Parallel Session	4
Taurini	

Advanced Preparation and Processing Techniques III Chair: A. Santagata

15³⁰ **[ID-158]** Further insights into vapour deposited ultrastable glasses from dielectric spectroscopy.

<u>C. Rodríguez-Tinoco¹, M. Rams-Baron¹, K.L. Ngai², J. Rodriguez-Viejo³,</u>

M. Paluch¹

¹ University of Silesia in Katowice

² CNR-IPCF

³ Universitat Autònoma de Barcelona

 15^{45} [ID-51] TiO_xN_y coatings deposited by Radio frequency magnetron sputtering.

N. Saoula¹, L. Bait, M. Azibi, S. Sali², N. Madaoui, A. Hammouche ⁷ CDTA ² CRTSE

16⁰⁰ **[ID-324]** Characterization and piezoelectric properties of promising potassium-sodium niobate (KNN) nanopowders through facile wet method.

<u>N. Senes</u>¹, A. Iacomini¹, L. Nuvoli¹, C. Santiago², S. Garroni², D. Neus^{3,4}, L. Pardo⁵, S. Enzo¹, G. Mulas¹

- ¹ University of Sassari, Department of Chemistry and Pharmacy
- ² ICRRAM and University of Burgos, Science and Technology Park
- ³ ICNCatalan Institute of Nanoscience and Nanotechnology (ICN2) CSIC
- ⁴ Barcelona Institute of Science and Technology
- ⁵ Instituto de Ciencia de Materiales de Madrid, CSIC
- 16¹⁵ [ID-368] Hafnium carbonitride ceramics produced by different routes.

A. Nepapushev¹, D. Moskovskikh², A. Rogachev³, A. Mukasyan⁴

¹ Center of Functional Nanoceramics, National University of Science and Technology, Russia

² National University of Science and Technology MISIS

³ Merzhanov Institute of Structural Macrokinetics and Materials Science, RAS, Russia

⁴ Department of Chemical and Biomolecular Engineering, University of Notre Dame, USA

16³⁰ [ID-271] Development of W-based refractory HEA as fusion reactor materials with low activation elements.

I.H. Kim, H. Oh, E.S. Park

Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University

ISMAN

16⁴⁵ **[ID-53]** Corrosion properties and bio-evaluation of nanostructured titanium alloys processed by HPT.

<u>A.M. Jorge Junior</u>¹, D. Perez¹, F. Hilario², V. Roche², J.C. Leprêtre², C. Bolfarini¹, W.J. Botta¹

¹ Federal University of São Carlos ² University of Grenoble Alpes

17 ⁰⁰	Coffee	Break

- 17³⁰ Poster Session II
- 18³⁰ Close of day two

Nanostructured Materials

Chair: A. Marrani

[ID-31] M.A. Domínguez-Crespo	Cellulose nanocrystals isolation from	discarded agro-industrial residues.
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[ID-36]	J. Olvera	Synthesis, characterization and thermodynamic analysis of WZn nano- powder produced by high energy mechanical alloying for catalytic perfor- mance of heavy oil recovery.
[ID-42]	M. Alizadeh	Effect of micro-sized $\rm Al_2O_3$ particles on properties of electrodeposited Ni-Mo nano-coatings.
[ID-64]	S. Yang	A single nanotwin FCC phases $\text{CuNiCoFeCrAl}_{\scriptscriptstyle 0.3}$ high entropy alloy matrix composites with the in-situ formed TiC nanoparticles.
[ID-65]	L. Omelchenko	Excess conductivity and pseudogap in $YBa_{2}Cu_{3}O_{7}$ nanolayers.
[ID-66]	T. Gaydamak	Easy-plane ferroborates. Magnetopiezoelectric effects.
[ID-81]	T. Atabaev	Size-dependent longitudinal relaxivity of Tb-doped $\rm Gd_2O_3$ nanoparticles for potential MRI and optical imaging.
[ID-135]	A. Fadeev	Plasmochemical synthesis of nanopowders of components of heavy tungsten alloys in thermal plasma flow.
[ID-138]	J. Schmauch	Determination of average grain size and grain size distributions of nanocrystalline materials - a comparative study including t-EBSD, TEM and XRD.
[ID-162]	L.C. Damonte	Structural and magnetic properties of MnZnO composites synthesized from waste alkaline and Zn/C batteries.
[ID-177]	M. Teng	Kinetics study on oxidation of nano- and micron-sized diamond by using a master kinetics curve model.
[ID-195]	A. Morone	Production and characterization of magnetic nanoparticles.
[ID-196]	L.E. Puentes Prado	Synthesis of crystalline nanocomposites of zinc sulfide (ZnS, ZnS/ZnO) with potential photocatalyic activity for hydrogen production.
[ID-217]	H. Lee	Variation of growth rate of metal oxide on deformed copper surfaces.
[ID-226]	F. Toschi	Excitation of coherent vibrations of nanoparticles of different shapes.
[ID-255]	S. Valencia Rodríguez	Synthesis and characterization of zinc oxide for UV-Radiation absorption.
[ID-261]	A.F. García-Ruiz	A study of the atomic segregation on the surface of bimetallic nanoparticles $\mbox{Pd-Pt}.$
[ID-270]	M. Muniz-Miranda	Photocatalytic Titania/Silver nanomaterials for the recognition and degra- dation of pollutants.

[ID-275]	D. Mirabile Gattia	Study on improved cements with Graphene Oxide.
[ID-278]	D.H. Song	Synthesis and characterization of Ta-Nb-V-Ti-W high entropy alloy by me- chanical alloying and spark plasma sintering.
[ID-309]	L.C. Damonte	Effect of Mn in ZnO using DFT Calculations: Magnetic and electronic changes.
[ID-323]	S. Yang	Shape change of submicron nickel powder under hydrogen and nickel chloride vapor.
[ID-333]	V. Chaika	Change in the phase composition of the carbon material during mechanochemical synthesis.
[ID-340]	J. Fornell	Epitaxial versus polycrystalline shape memory Cu-Al-Ni thin films.
[ID-344]	A. Omelyanchik	Magnetic properties of core/shell manganese oxide nanoparticles before and after degradation in water.
[ID-347]	L. Jumabayeva	Synthesis of nanosized Pd-catalysts on activated and Al-Zr-pillared mont- morillonite and their catalytic behavior in the isomerization of n-hexane.
[ID-348]	A. Ardu	Mesoporous $CoFe_2O_4$ sorbents for H_2S removal at mind temperature.
[ID-350]	R. Hirian	Effect of short time annealing at Fe / transition on the microstructure of milled $\rm Nd_2Fe_{_{14}}B+10wt\%$ -Fe magnetic nanocomposites.
[ID-355]	N. Senes	The structure of VNbO ₅ ternary oxide compound prepared by extended ball milling of V ₂ O ₅ and Nb ₂ O ₅ powders followed by thermal ageing at 650 °C.
[ID-357]	D. Liguori	Characterization of montmorillonite based organoclay using an ethoxylat- ed fatty acid as a template.
[ID-361]	A. Sycheva	Development of novel ultrafine grain Cu metal matrix composites reinforced with Ti-Cu-Co-M (M: Ni, Zr) amorphous-nanocrystalline powder.
[ID-374]	M. Ferretti	Thermogravimetry coupled with evolved gas analysis for nanoparticles characterization.
[ID-379]	G. Gorokh	Synthesis of $\rm Sr_2FeMoO6$ – nanostructures in the anodic alumina matrices by the sol-gel method.
[ID-386]	S. Bereznev	Pulsed laser deposition of conductive ${\sf Zn}({\sf O},{\sf S})$ thin films for optoelectronics.
[ID-395]	S. Kaloshkin	Synthesis of Ni-Ti coatings on different metallic substrates by mechanical alloying and subsequent laser treatment.
[ID-396]	D. Mulinari	Cellulose fibers from palm fibers coated by zirconium oxychloride.
[ID-401]	D. Mirabile Gattia	Realization of carbon nanotube-based stretchable electronic devices and applications.
[ID-417]	I.M. Centeno	Hydrothermal methods with microwaves, rotavapor to obtain $V_2O_5\text{-WO}_3/\text{TiO}_2/\text{Au}$ impregnated with Cs, Li and with Cs-Li.
[ID-424]	S. Fatimah	Architecting layer by layer hybrid materials on titanium for painless implantation.
[ID-434]	M. Ferretti	Synthesis and characterization of a new photocatalyst based on ${\rm TiO}_2$ nanoparticles supported on magnetic materials from iron and steel industrial waste.
[ID-435]	A. Michel	Tailoring nucleation and stress magnitude during surfactant-mediated metallic film growth.
[ID-440]	E.M. Mazzer	Room temperature consolidation of pure magnesium/aluminum compos- ite by high pressure torsion.
[ID-445]	A.A. El-Moula	Optical properties of nanocrystalline/amorphous ${\rm TiO_2}$ thin film deposited by rf plasma magnetron sputtering.

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[ID-454]	M. Stefan	Studies on CoFe $_{\rm 2}{\rm O}_4@{\rm TiO}_2$:Tb magnetic recoverable nanocomposites with enhanced photocatalytic activity.
[ID-455]	D. Toloman	Influence of PVP on photocatalytic activity of ${\rm SnO}_2{\rm -TiO}_2$ composite nanoparticles.
[ID-463]	O. Pana	Structural, compositional and magnetic characterization of $\rm MeFe_2O_4$ (Me=Fe, Ni, FeNi) nanocomposites.
[ID-467]	S.J. Hwang	The coarsening and formation rate of dispersoids in a ODS Cu alloy with $\rm Cr_2O_3$ produced by the cryogenic milling.
[ID-472]	N. Nashrah	Formation of inorganic layer on Ti6Al4V with different microstructural con- stituents via plasma electrolytic oxidation.
[ID-480]	R.M. Leal Neto	Reaction synthesis of TiFe compound from ball milled ${\rm TiH_2}$ and Fe mixture: an easy way to produce nanostructured active material for hydrogen storage.
[ID-484]	D. Kalganov	Synthesis and preparation bismuth ferrite nanoparticles for biomedical applications.
[ID-487]	P. Luque Morales	Green synthesis of Zinc Oxide nanoparticles using natural extracts.
Por	ous Materials	
Cha	air: : L. Ruggiero, A. D	Del Tedesco
[ID-33]	Á. Aguilar	Activated carbon from agroindustrial wastes for heavy metal contaminated water treatment.
[ID-63]	H. Chiang	Pore chcaracteristics of nickel, iron and cobalt impregnated on SBA-15.
[ID-134]	H. Huang	Enhancing the corrosion resistance, platelet activation and anti-bacterial adhesion of biomedical titanium surface through formation of mixed nano-/submicron-scale TiO_2 network topography.
[ID-154]	O. Ghabeche	Application of the Algerian diatomite in adsorption of diclofenac.
[ID-238]	D. Mirabile Gattia	Preparation of CaO-based sorbent from coal fly ash cenospheres for calcium looping process.
[ID-398]	Y. Sun	Enhancing the bio-corrosion resistance and bone cell responses of tita- nium dental implant surface by coating a hybrid layer containing porous biphasic calcium phosphates (BCPs)/dense tantalum pentoxide (Ta_2O_5).
[ID-462]	D. Mirabile Gattia	Study on nanostructured $\mathrm{MgH}_{\mathrm{2}}$ with Fe and its oxides for hydrogen storage applications.
[ID-485]	P. Zuñiga	Utilization of bioinspired nickel aluminates films for methanol electro- chemical detection.



WEDNESDAY 4 JULY

08 ⁴⁵	PLENARY – Heterogeneous dynamics of metallic glass-forming liquids. Paul Voyles, University of Wisconsin, USA Auditorium Chair: L. Greer
	Parallel Session 1 Auditorium
	Metallic Glasses VI Chair: M. Atzmon
10 00	[ID-304] (Invited) Athermal changes in structure induced by thermal cycling of metallic glasses.
	L. Greer Department of Materials Science & Metallurgy, University of Cambridge
10 ³⁰	[ID-180] Statistics and the spatiotemporal correlations of stress and strain in model bulk metallic glasses.
	A.E. Lagogianni, M. Hassani, F. Varnik Interdisciplinary Centre for Advanced Materials Simulation (ICAMS), Ruhr-Universität Bo- chum, Bochum, Germany
10 ⁴⁵	[ID-136] Structure relaxation of a severely deformed $Pd_{40}Ni_{40}P_{20}$ bulk metallic glass.
	A.H. Shahkhali, H. Rösner, S. Divinskiy, W. Gerhard Institute of Materials Physics University of Münster
	Parallel Session 2 Accademia
	Nanostructured Materials VI Chair: L. Battezzati
10 ⁰⁰	[ID-116] (Invited) Tri-segmented magnetic nanowires with antiparallel alignment: suitable platforms for biomedical applications with minimized agglomeration?
	E. Pellicer ¹ , J. Nogués ^{2,3} , J. Sort ^{1,3} , J. Zhang ¹ , <u>M.D. Baró¹</u> , S. Suriñach ¹ ¹ Departament de Física, Universitat Autònoma de Barcelona ² ICREA ³ ICN2

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10³⁰ **[ID-191]** Novel and sensitive immunosensor based on metal-enhanced fluorescence by nanostructured surface: application to human IgG detection in urine.

B. Della Ventura¹, M. Gelzo², A. Dello Russo², A. Morone³, B. Edmondo⁴, G. Castaldo², G. Francesco⁵, R. Velotta¹

¹ Università di Napoli "Federico II" - Dipartimento di Fisica

² Università di Napoli "Federico II" - Dipartimento di Biotecnologie e Medicina Molecolare

³ CNR-ISM Unità di Tito Scalo

⁴ Università di Napoli "Federico II" - Centro Ricerche Biomateriali

⁵ Università di Napoli "Federico II" - Dipartimento di Ingegneria Elettrica

10⁴⁵ [ID-50] Microstructure and surface design of metastable beta-Ti alloys for biomedical use.

A. Gebert, S. Pilz, R. Schmidt, J. Freudenberger, M. Calin *IFW Dresden*

Parallel Session 3 Taurini

Materials for Renewable Energy IV Chair: J.S.C. Jang

 10^{00} [ID-102] High entropy alloys for hydrogen storage applications.

G. Zepon¹, D. Leiva², V. Aranda¹, R.i Strozi¹, T. Ishikawa¹, <u>W.J. Botta¹</u> ¹ Universidade Federal de São Carlos ² Department of Materials Engineering, Federal University of São Carlos, São Carlos, Brazil

10¹⁵ **[ID-46]** Synthesis and hydrogen storage ability of the high-entropy alloys.

V. Zadorozhnyy¹, S. Klyamkin², E. Berdonosova², I. Tomilin¹, A. Bazlov¹, A. Abdulaev¹, M. Zadorozhnyy¹, M. Zheleznyi¹, I. Shchetinin¹, G. Milovzorov¹ ¹ National University of Science and Technology "MISiS" ² Department of Chemistry, Lomonosov Moscow State University

 10^{30} [ID-167] Efficient hydrogen evolution on Zn doped MoS₂ nanosheets.

<u>J.R. Vargas Garcia</u>¹, A.M. Robledo², K.N. Ba¹ ⁷ Instituto Politecnico Nacional-Esiqie, Depto. Ing. Metalurgia Y Materiales ² Instituto Politecnico Nacional-Esiqie, Depto. ing. Quimica

 10^{45} [ID-165] Hydrogen evolution on nanotubular MoS₂-PtS₂/C composites.

A. Verdejo-Palacios¹, R. González-Huerta², J. García¹ ¹ Instituto Politécnico Nacional-Esiqie, Depto. Ing. En Metalurgia Y Materiales ² Instituto Politécnico Nacional-Esiqie, Lab. Electroquímica Y Corrosión, UPALM

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Parallel Session 4	1
Caudini	

Magnetic, Transport and Optical Properties from Nanoscale to Bulk I Chair: K.N. Trohidou

10⁰⁰ **[ID-468] (Invited)** Simultaneous local heating/thermometry based on plasmonic magnetochromic nanodomes.

Z. Li¹, A. Lopez-Ortega², A. Aranda-Ramos³, J.L. Tajada¹, J. Sort^{3,4}, C. Nogués³, P. Vavasori², <u>J. Nogués^{4,1}</u>, B. Sepúlveda¹

¹ Catalan Institute of Nanoscience and Nanotechnology (ICN2)

² CIC nanoGUNE

³ Universitat Autònoma de Barcelona

^₄ ICREA

10³⁰ **[ID-494] (Invited)** Enhanced magnetoelectric effect in m-type hexaferrites by Co substitution into trigonal bi-pyramidal sites.

J. E. Beevers¹, C. J. Love¹, V. Lanzarot¹, <u>S. A. Cavill^{1,4}</u>, H. Izadkha ², C. Vittoria², R. Fan³, G. van der Laan³, S. S. Dhesi³

¹ Department of Physics, The University of York, Heslington, York, UK ² Department of Electrical and Computer Engineering, Northeastern University Boston, Massachusetts, USA

³ Diamond Light Source, Harwell Science and Innovation Campus, Didcot, Oxon, UK

11⁰⁰ Coffee Break

Parallel Session 1 Auditorium

Metallic Glasses VII Chair: J. Eckert

11³⁰ **[ID-257] (Invited)** Real time determination of visco-plastic strain in metallic glasses via x-ray scattering.

Y. Sun¹, A.F.T. Leong², H. Sheng², J-S Park³, T.C. Hufnagel²

¹ Institute of Physics, Chinese Academy of Science

² Dept. of Materials Science and Engineering, Johns Hopkins University

³ Advanced Photon Source, Argonne National Laboratory



12⁰⁰ [ID-274] On the processing, mechanical and structural characterization of ZrNi amorphous thin films.

M. Ghidelli¹, M. Coulombier², T. Pardoen², H. Idrissi², T. Schülli³, S. Gravier^{1,4}, J-J Blandin¹, R. Daudin¹

¹ Univ. Grenoble Alpes, Grenoble INP / CNRS, France

² IMMC, Université Catholique de Louvain, Louvain-la-Neuve, Belgium

³ The European Synchrotron Facility, ESRF, Grenoble, France

⁴ VULKAM / Amorphous metallic micro-casting / France

12¹⁵ **[ID-91]** Effect of cobalt addition on microstructural evolution, thermal stability and magnetic properties of Fe-based amorphous alloys.

<u>C. Parra Velásquez</u>, D.P. Cabarcas, F.J.B. Osorio Universidad de Antioquia

12³⁰ [ID-206] The effect of heat treatment on magnetic and thermal properties of finemet-type ribbons and microwires.

M. Churyukanova¹, S. Kaloshkin¹, E. Shuvaeva¹, A. Aronin², V. Zhukova³, A. Zhukov³

¹ National University of Science and Technology "MISIS", Moscow, Russia

- ² Insitute of Solid State Physics
- ³ Dept. Phys. Mater., University of Basque Country, UPV/EHU San Sebastián 20018, Spain
- 12⁴⁵ [ID-273] Monte Carlo simulation of magnetic structures in amorphous alloys based on Rare-Earth metals.

I. Pashueva, A. Bondarev, I. Bataronov Voronezh State Technical University

> Parallel Session 2 Accademia

Nanostructured Materials VII Chair: T. Teranishi

11³⁰ **[ID-235]** CoFe₂O₄-ZrO₂ nanocomposites, modification with gold nanoparticles and their SERS application.

<u>A. Del Tedesco</u>¹, A. Benedetti², D. Peddis³, G. Sponchia², L. Litti⁴, M. Meneghetti⁴, P. Riello², R. Ottini², V. Piotto⁴

¹ Dipartimento di Scienze Molecolari e Nanosistemi, Università Ca' Foscari

² Department of Molecular Sciences and Nanosystems, Centro di Microscopia Elettronica "Giovanni Stevanato" and INSTM, Università Ca' Foscari Venezia, Venezia-Mestre, Italy

³ Istituto di Struttura della Materia – CNR, Monterotondo Scalo (RM), Italy

⁴ Nanostructures and Optics Laboratory, Department of Chemical Sciences, University of Padova, Padova (Italy)

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11⁴⁵ **[ID-211]** Detection of toxic/ flammable gases by Mn₃O₄ based sensors for safety, health and public security applications.

L. Bigiani¹, C. Maccato², G. Carraro², A. Gasparotto², C. Sada³, E. Comini, D. Barreca⁴

¹ Università di Padova

² Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy

³ Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy

⁴ CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy

12⁰⁰ [ID-456] Magnetic nano-composites for biomedical and magnetocaloric application.

A. Zelenakova, P. Hrubovcak¹, O. Kapusta², J. Kovac³, V. Zelenak⁴

- ¹ Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research,
- ² University of P.J. Safarik

³ Institute of Physics, Slovak Academy of Sciences

- ⁴ Department of Inorganic Chemistry, University of P.J. Safarik
- 12¹⁵ **[ID-404]** Using core-level shifts as a descriptor for identification of nanoparticles with optimized catalytic activity.

A.A. Tal¹, W. Olovsson¹, A. Posada-Borbon², H. Grönbeck², <u>I.A. Abrikosov¹</u> ¹ Linköping University, Sweden and NUST "MISIS", Moscow, Russia ² Chalmers University of Technology, Sweden

12³⁰ **[ID-83]** Nano-sized silicate hydrate for high strength and durable concrete.

G. Ferrari¹, G. Artioli², MI Dalconi², L. Valentini²

¹ Mapei Spa

² Department of Geoscience, University of Padua

12⁴⁵ [ID-148] Towards micro - and nanostructured AlZnCu alloys cast from commercial-purity metals.

W.K. Krajewski¹, P.K. Krajewski¹, A.L. Greer², M. Faryna³, L. Rogal³

¹ AGH University of Science and Technology, Faculty of Foundry Engineering

² University of Cambridge, Department of Materials Science and Metallurgy

³ Institute of Metallurgy and Materials, Polish Academy of Sciences

Parallel Session 3 Taurini

Materials for Renewable Energy V Chair: S. Nakamae

ISMAN

11 ³⁰	[ID-407] (Invited) Nanofluids in energy systems- prospects and challenges.
	S.M.S. Murshed University of Lisbon
1200	[ID-288] Thermophoretic properties of colloidal dispersions of maghemite nanoparticles in ionic liquids based on TFSI anions.
	M. Sarkar ¹ , J. Riedl ¹ , G. Mériguet ¹ , G. Demouchy ² , E. Dubois ¹ , V. Peyre ¹ , R. Perzynski ¹ ¹ Sorbonne Université/ CNRS UMR 8234 – lab. PHENIX, Paris, France ² Université Cergy-Pontoise, Département de la Physique, 33 Bd du Port, Cergy-Pontoise, France
12 ¹⁵	[ID-477] Study of the Seebeck coefficient in a system of electrolyte with magnetic nanoparticles.
	M. Vasilakaki ¹ , J. Chikina ² , <u>K. Trohidou¹</u> , A. Varlamov ³ ¹ Institute of Nanoscience and Nanotechnology, NCSR "Demokritos" ² IRAMIS, LIONS, UMR NIMBE 3299 CEA-CNRS, CEA-Saclay ³ CNR-SPIN
12 ³⁰	[ID-493] Charge distribution on the surface of $CoFe_2O_4$ nanoparticles.
	N. Ntalli ¹ , K. N. Trohidou ¹ , D. Peddis ² ¹ Institute of Nanoscience and Nanotechnology, NCSR 'DEMOKRITOS', Athens, Greece ² Istituto di Struttura della Materia-CNR, Monterotondo Scalo, Roma, Italy
12 ⁴⁵	
	Parallel Session 4 Caudini
	Magnetic, Transport and Optical Properties from Nanoscale to Bulk II Chair: A. Zhukov
11 ³⁰	[ID-391] (Invited) Out-of-equilibrium cation distribution in ferrites: static and dy- namic magnetic properties.
	G. Barrera ¹ , M. Coisson ¹ , F. Celegato ¹ , S. Raghuvanshi ² , S.N. Kane ² , P. Tiberto ¹ ⁷ INRiM

² School of Physics, Devi Ahilya University, Indore, India

ISMAN

12⁰⁰ **[ID-212]** Dynamical magnetic properties of interacting ultra-small nanoparticle systems.

R. Mathieu¹, M.H. Waltin², P. Nordblad¹, M. Vasilakaki³, G. Margaris³, K.N. Trohidou³, N. Yaacoub⁴, M. Bellusci⁵, F. Padella⁵, D. Fiorani ^{6,7}, D. Peddis⁶

¹ Department of Engineering Sciences, Uppsala University, Uppsala, Sweden

² Department of Physics, Stockholm University, Stockholm, Sweden

³ Institute of Nanoscience and Nanotechnology, NCSR "Demokritos, Attiki, Greece

⁴LUNAM, Université du Maine, Institut des Molécules et Matériaux du Mans, CNRS UMR-6283, Le Mans, France

⁵ ENEA, Agency for New Technologies, Energy and Sustainable Economic Development, SSPT-PROMAS-MATPRO, Rome, Italy

⁶ Istituto di Struttura della Materia-CNR, Monterotondo Scalo (RM)

⁷ Center of Nanomaterials Research, Immanuel Kant Baltic Federal University, Kaliningrad, Russia

12¹⁵ [ID-229] On the magnetic properties of Fe-doped hydroxyapatite nanoparticles.

A. Adamiano, A. Tampieri, M. Iafisco, M. Sandri, S. Sprio CNR - ISTEC

12³⁰ [ID-44] Curie temperature changes in Nd doped Yig by mechanosynthesis.

E.B. López¹, F.S. de Jesús¹, A.M.B. Miró¹, <u>C.A. Cortes Escobedo²</u> ¹ UAEH

² Instituto Politécnico Nacional, CIITEC

12⁴⁵ **[ID-458]** FePd magnetic nanoparticles by solid-state dewetting of thin films.

G. Barrera¹, F. Celegato¹, M. Coisson¹, M. Cialone¹, P. Rizzi², <u>P. Tiberto¹</u> ¹ INRiM ² Dipatimento di Chimica, Università di Torino

13⁰⁰ Lunch

WEDNESDAY 4 JULY

AFTERNOON

14³⁰ KEYNOTE – H_a Photo-generation promoted by iron oxide nanoarchitectures prepared by CVD-Based approaches. Chiara Maccato, Padova University, Italy Auditorium Chair: A. Paolone Parallel Session 1 Auditorium Metallic Glasses VIII Chair: J. Bhatt 15³⁰ [ID-117] On the crystallization of a new high-entropy metallic glass studied by Mössbauer spectroscopy. S.L. Panahi, E. Pineda, P. Bruna Departament de Física. Universitat Politècnica de Catalunya 15⁴⁵ **[ID-94]** HRTEM investigation of diffusion in glassy multilayer films. S. Ketov¹, I. Ivanov², D. Luzguine-Luzgin³, C. Suryanarayana⁴, L. Greer², A. Chuvilin⁵, J. Eckert¹ ¹ Erich Schmid Institute of Materials Science, Austrian Academy of Sciences ² Department of Materials Science & Metallurgy, University of Cambridge ³ Advanced Institute for Materials Research, Tohoku University ⁴ University of Central Florida, Department of Materials Science and Engineering ⁵ CIC nanoGUNE Consolider 16⁰⁰ [ID-227] Fluctuation electron microscopy (FEM) of amorphous CuZr and nanocrystalline Cu nanolaminates. F.A. Davani, S. Hilke, M. Peterlechner, G. Wilde **16**¹⁵ [ID-124] Measurement of glass transition temperature of metallic glasses using step-scan modulated temperature differential scanning calorimetry. P.P. Jana, J. Das 16³⁰ [ID-30] In-situ Ta particle reinforced Zr-based bulk metallic glass matrix composites. W. Guo¹, R. Yamada², J. Saida², S. Lü¹, S. Wu¹ ¹ Huazhong University of Science and Technology, China ² Tohoku University, Japan

Programme Exte. - Wednesday 4 July

ISMAN

16⁴⁵ **[ID-90]** 3D printing of Fe-based bulk metallic glass and composites with large dimensions and enhanced toughness by HVOF thermal spray.

L. Liu

Huazhong Univeristy of Science and Technology

	Parallel Session 2 Accademia
	Nanostructured Materials VIII Chair: M.D. Baro'
15 ³⁰	[ID-450] (Invited) Pseudo-morphic transformation of nanocrystals by element replacement.
	T. Teranishi, R. Sato Kyoto University
16 00	[ID-155] Solution combustion synthesis of nanostructured non-oxide materials: alloys, intermetallics, nitrides.
	<u>S. Roslyakov</u> ¹ , C. Chuck ² , A. Mukasyan ² ¹ National University of Science and Technology MISIS ² University of Notre Dame
16 ¹⁵	[ID-209] Grain growth kinetics in Al CoCrFeNi ($x=0$, 0.3, 0.6, 1 mol) high entropy alloy synthesized through mechanical alloying.
	<u>M.M. Garlapati</u> , B.S. Murty Indian Institute of Technology Madras
16 ³⁰	[ID-215] Shape controlled synthesis of Au-Cu bimetallic nanostructures.
	M.K. Singh, J. Basu, B. Mukherjee, R.K. Mandal ¹ IIT(BHU), Varanasi
16 ⁴⁵	[ID-303] Liquid state amorphization of interphases in metal-silicon couples.
	R. Walser University of Texas (Retired) and MetaMaterials Inc.
	Parallel Session 3 Taurini
	Materials for Renewable Energy VI Chair: S. Nakamae

ISMANAM Rem 2019

15³⁰ **[ID-283] (Invited)** Effect of non-equilibrium processing on the synthesis and thermoelectric properties of skutterudites and half Heusler compounds.

A. Castellero¹, F. Aversano¹, S. Branz¹, C. Artini², A. Ferrario³, S. Boldrini³, C. Fanciulli⁴, <u>M. Baricco¹</u>

¹University of Turin, Department of Chemistry and NIS, Turin, Italy ²CNR – ICMATE, Padova Unit, Padova, Italy ³CNR – ICMATE, Unità di Padova, Padova, Italy ⁴CNR – ICMATE, Unità di Lecco, Lecco, Italy

16⁰⁰ **[ID-369]** Augmented thermoelectric power generation in ferrofluid based thermoelectro chemical cells.

<u>K. Bhattacharya</u>, T. Salez, M. Bonnet, M. Roger, C. Guibert, V. Peyre, E. Dubois, R. Perzynski, E. Laux, L. Jeandepeux, H. Keppner, S. Nakamae

16¹⁵ **[ID-321]** Role of Ta in improving thermoelectric properties of nanocrystalline Ti_{1-x}Ta_xNiSn (x=0, 0.01, 0.03, 0.05) alloys synthesized by mechanical alloying.

A. Karati¹, R.C. Mallik², R. Shabadi³, U.V. Varadaraju¹, B.S. Murty⁴

¹ Department of Chemistry, Indian Institute of Technology Madras, Chennai, India ² Thermoelectric Materials and Devices Laboratory, Department of Physics, Indian Institute of Science, Bangalore, India

³ Faculty of Science and Technology, UMET, University of Lille, Villeneuve-d'Ascq, France ⁴ Department of Metallurgical & Materials Engineering, Indian Institute of Technology Madras, Chennai, India

16³⁰ **[ID-429]** Highly efficient and facile PEDOT:PSS-based thermoelectric materials doped with single walled carbon nanotubes.

<u>K. Yusupov</u>, A. Vomiero¹, D. Hedman¹, V. Khovaylo², A. Larsson¹, S. You¹, A. Nasibulin³, A. Tsapenko³

¹Lulea Technical University

² National University of Science and technology"MISiS" ³Skolkovo Institute of Science and Technology

16⁴⁵

Parallel Session 4 Taurini

Magnetic, transport and optical properties from nanoscale to bulk III Chair: R. Mathieu
ISMANAM Rem 2015

15³⁰ [ID-164] (Invited) Engineering of magnetic properties and GMI effect in Fe-rich magnetic microwires by stress annealing.

<u>A. Zhukov^{1,2}</u>, P. Corte-León³, M. Ipatov¹, J.M. Blanco³, M. Churyukanova⁴, V. Zhukova¹

¹ Dept. Phys. Mater., University of Basque Country, UPV/EHU San Sebastián 20018

² IKERBASQUE, Basque Foundation for Science, 48011 Bilbao, Spain

³ Dpto. de Física Aplicada, EUPDS, UPV/EHU, 20018, San Sebastian, Spain

⁴ National University of Science and Technology «MISIS», Moscow, 119049, Russia

16⁰⁰ **[ID-225]** Development of magnetic anisotropy in CoO/Fe(001) by bottom-up interface engineering.

A. Brambilla¹, <u>A. Picone¹</u>, D. Giannotti¹, H. Hedayat¹, E. Carpene², C. Dallera¹, G. Vinai³, P. Torelli³, M. Foerster⁴, L. Aballe⁴, M. Finazzi¹, D. Lamberto¹, F. Ciccacci¹ ¹ Dipartimento di Fisica, Politecnico di Milano ² IFN-CNR

³ Laboratorio TASC, IOM-CNR

⁴ ALBA Synchrotron Light Facility

16¹⁵ [ID-443] Effect of H⁺ irradiation on magneto-optical properties of Co-doped ZnO thin films.

<u>A. Di Trolio</u>¹, G. Varvaro¹, A. M. Testa¹, A. Polimeni², F. Pineider³, C. Fernandez⁴, G. Barucca⁵, P. Mengucci⁵

¹ CNR-Istituto di Struttura della Materia

² Dipartimento di Fisica, Università di Roma "La Sapienza

³ Dipartimento di Chimica e Chimica Industriale, Universià di Pisa

⁴ CNR-Institute of Materials for Electronics and Magnetism

⁵ Dipartimento di Scienze e Ingegneria della Materia, dell'Ambiente ed Urbanistica – SI-MAU, Università Politecnica delle Marche

16³⁰ **[ID-300]** Metastable (Mn,Ti)Bi intermetallic: magnetic properties and thermal stability.

E.S. Olivetti¹, C. Curcio², A. Bartok³, M. LoBue³, L. Martino¹, V. Basso¹

¹ INRIM, Istituto Nazionale di Ricerca Metrologica

² IMEM-CNR, Istituto dei Materiali per l'Elettronica ed il Magnetismo - Consiglio Nazionale delle Ricerche

³ SATIE, ENS Cachan, CNRS, Universitè Paris-Saclay

16⁴⁵ [ID-308] Magnetic properties of Fe-Ni permalloy produced with selective laser melting.

A. Mazeeva, V. Bobyr, S. Manninen, M. Staritsyn, P. Kuznetsov

17⁰⁰ Coffee Break

17³⁰ Poster Session III

- 18³⁰ Close of day three
- 20⁰⁰ CONFERENCE DINNER

ISMANAM

Materials for Renewable Energy Chair: D.M. Trucchi

[ID-32]	M.A. Domín- guez-Crespo	Catalytic performance of alloyed PtPdNi ternary as electrocatalysts for the methanol oxidation in alkaline medium.
[ID-74]	E. Pereira da Silva	Effects of friction stir processing on hydrogen storage of ZK60 alloy.
[ID-97]	D. Zhumabayeva	To the question of creation of the lithium cluster in Kazakhstan.
[ID-101]	M. Gajdics	Correlation between microstructure and hydrogen storage in Mg-based nanocomposites processed by high-pressure torsion.
[ID-147]	B.K. Nguyen	Co doped MoS2 nanosheets as efficient electrocatalyst for the hydrogen evolution reaction
[ID-166]	A.R. Aguilera	Synthesis and characterization of one-dimensional MOO3-MOS2/C structures.
[ID-242]	G. Barucca	Radio frequency sputtering deposition of iron oxide thin films for photoelec-trochemical water splitting.
[ID-299]	P.D.H. Yen	Magnetic and magnetocaloric properties in $\mathrm{Gd}_{2}\mathrm{O}_{3}$ electrospun nanofibers.
[ID-315]	S. Oh	Binder-free Cellulose-derived Carbon/SnO $_{\rm 2}$ electrospun nanofibers as long-life Li-lon battery electrodes
[ID-316]	J.W. Lee	Synthesis and electrochemical investigation of $\rm Zn_{_{1.67}}Mn_{_{1.33}}O_{_4}$ microspheres as a new anode material for Lithium Ion battery.
[ID-327]	M.C. Sung	Comparison of graphene hybridized ${\rm CeO}_{_2}$ nanoparticles and nanorods for Lithium-Air battery cathodes.
[ID-343]	L.C. Damonte	Zn-based semiconductor nanopowders doped by mechanical milling.
[ID-366]	J.S. Blázquez	Evaluation of the magnetocaloric effect in polycrystalline $La_{0.7}Ca_{0.3}Mn_{1-x}Ni_xO_3$ (x=0, 0.02, 0.07, 0.1) samples synthesized by ball milling.
[ID-370]	K. Sarlar	Magnetocaloric properties of FeNiGaMnSi high entropy alloys
[ID-438]	A. Chakraborty	Magnetic properties of exchange coupled nanocomposites obtained by milling $\alpha\text{-Fe}$ and recycled $\text{SmCo}_5.$
[ID-483]	L. Caggiu	Synthesis of new thiospinel $\rm MgCr_2S_4$ for multivalent battery cathode applications.
[ID-486]	A. Martínez	Characterization of alloys TiCr _{1.1} V _{0.9} , TiCr _{1.2} V _{0.8} , TiCr _{1.3} V _{0.7} obtained by mechanical alloy for storage of hydrogen in the solid state.
[ID-491]	F. Varsano	NiCo alloys as catalyst for magnetically induced dry reforming of methane.

Magnetic, Transport and Optical Properties from Nanoscale to Bulk Chair: G. Muscas and G. Barrera

[ID-153]	P. Gebara	Thermodynamic modeling of formation enthalpy structural and magnetocaloric properties of half-heusler (Mn,X)-Co-Ge (X = Zr, Pd) alloys.
[ID-181]	A. Kolano-Burian	Magnetic properties, thermal stability and crystallization study of high induction metallic ribbons $\rm Fe_{67}Co_{20}B_{13}.$
[ID-232]	J.J. Suñol	Structure and magnetic behavior of Ni-Mn based Heusler alloys produced by ball milling.
[ID-251]	P. Corte-León	The effect of stress-annealing on magnetic properties of thick microwires.
[ID-252]	A. Zhukov	Engineering of magnetic properties of Co-rich microwires by post-process- ing.

[ID-253]	C. Galassi	Facile batch-scale production of spinel ferrite for permanent magnet appli- cation.
[ID-277]	M. Kowalczyk	Structure and magnetic properties of $\rm Fe_{67}Co_{20}B_{13}$ alloy after crystallisation of amorphous ribbon by isothermal annealing with ultra-rapid heating.
[ID-389]	M. Drobosyuk	The magnetocaloric effect of bulk samples of Co-doped Ni-Mn-Sn Heusler alloys.
[ID-437]	I. Shchetinin	Structure and magnetic properties of alloys (Nd_{1-x}Ce_x) (Fe_{1-y}Co_y)_{11}Ti (0 \leq X \leq 0.3, Y = 0; 0.25) produced by melt spinning.
[ID-451]	M. El-Desoky	Novel relaxor ferroelectric-like behavior in ${\rm BaTiO}_{_3}$ and PbTiO3 doped glasses for energy storage applications.
[ID-461]	C. Cutrano	Structural and magnetic properties of Fe-X (X = Co, Cu) nanoclusters by density functional theory calculations.
[ID-466]	R.F. Gharib	Structural and multiferroic properties of nanostructured strontium doped bismuth ferrite.
[ID-489]	B. Muzzi	A new strategy for designing exchange coupled nano-heterostructures.
[ID-504]	M. Hassan	Perpendicular magnetized GMR spin valves with a synthetic antiferromagnetic reference layer on flexible substrates.

Applications

Chair: V. Kamalakar Mutta

[ID-60]	S. Tungatarova	Composite materials for catalytic methane reforming.
[ID-130]	A. Bouabca	First-principles study of new series of quaternary Heusler alloys CsSrCZ (Z= Si, Ge, Sn, P As, and Sb).
[ID-221]	E. Pineda	Application of mechanically alloyed Mn-Al metallic particles to wastewater treatment: a comparative investigation of chemical and bacterial approaches to dye degradation in residual textile waters.
[ID-228]	W.B. Mbarek	Influence of doped Mn-Al nanoscrystalline powders produced by ball-milling in the degradation efficiency of azo dye.
[ID-286]	R. Drevet	Electrodeposition of cobalt-substituted calcium phosphate coatings on $\rm Ti_{22}Nb_eZr$ alloy for bone implant applications.
[ID-356]	S. Tungatarova	Heteropoly complex composite materials for oxidative conversion of al- kanes.

THURSDAY 5 JULY

	Parallel Session 1 Auditorium
	Nanostructured Materials IX Chair: W. Botta
10 00	[ID-500] (Invited) Magnetic Fe-based nanoarchitectures.
	F. Sayed, N. Yaacoub, Z. Nehme, R. Busselez, Y. Labaye, F. Calvayrac, J.M. Greneche
10 ³⁰	[ID-159] Deformation of nanocrystalline PdAu and concurrent in-situ X-ray diffraction.
	M.J. Deckarm ¹ , A. Leibner ¹ , V. Dyadkin ² , M. Majkut ² , R. Birringer ¹ ⁷ Saarland University ² ESRF
10 ⁴⁵	[ID-439] In-situ and real time observation of crystallisation-induced stress development during the early growth stages of $Mo_{1-x}Si_x$ alloys.
	A. Michel ¹ , B. Krause ² , G. Abadias ¹ , A. Fillon ³ , J. Colin ¹ , T. Baumbach ^{1,4} ¹ Institut Pprime, Département de Physique et Mécanique des Matériaux ² Institut für Photonenforschung und Synchrotronstrahlung (IPS), KIT ³ INSA, UMR CNRS 6226, équipe chimie-métallurgie ⁴ Laboratorium für Applikationen der Synchrotron- strahlung (LAS)
	Parallel Session 2 Accademia
	Metallic Glasses IX Chair: J. Eckert
10 00	[ID-132] (Invited) A structural study of a rejuvenation effect in amorphous Gd-Co metal by anomalous x-ray scattering.
	S. Hosokawa ¹ , J.R. Stellhorn ¹ , Y. Yamazaki ² , H. Kato ³ , N. Blanc ⁴ , N. Boudet ⁴ ⁷ Kumamoto University ² National Institute of Technology, Ube College ³ Tohoku University ⁴ CNRS

10³⁰ **[ID-127]** Rejuvenation in metallic glasses: high resolution electron microscopy study.

I. Ivanov¹, S. Ketov², D. Luzguine-Luzgin³, J. Eckert², A.L. Greer¹

¹ Department of Materials Science & Metallurgy, University of Cambridge

² Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

³ Advanced Institute for Materials Research, Tohoku University

10⁴⁵ [ID-161] The correlation between rejuvenation behavior and boson heat capacity peak of bulk metallic glass.

H. Zhou, N. Nollmann, R. Hubek, M. Peterlechner, G. Wilde Institute of Materials Physics, University of Münster

> Parallel Session 3 Taurini

Phase Transformation I Chair: M. Baricco

10⁰⁰ [ID-410] (Invited) Stable and metastable crystalline phases in the AI-Ge and AI-Ce-Mn systems: structural characterization and formation mechanisms

<u>M. Kaufman</u>¹, C.S. Kiminami², W.J. Botta², C. Bolfarini², C. Francisco¹, J. Jankowski¹ ⁷ Colorado School of Mines

² UFSCar - Federal University of São Carlos

10³⁰ **[ID-122]** Mechanical spectroscopy as a tool to study first and second order transitions in metastable Fe-Ga alloys.

V. Palacheva¹, G. Vuilleme², D. Mari², <u>I.S. Golovin¹</u> ¹ NUST MISiS ² EPFL

10⁴⁵ [ID-140] Kinetics of polymorphic transformations of pharmaceuticals induced by mechanical milling.

J-F Willart¹, P. Bordet², M. Descamps¹, E. Dudognon¹, P. Martinetto²,

W. Pagnoux^{1,2}

¹ UMET (Unité Matériaux et Transformations) UMR CNRS 8207

² Univ. Grenoble Alpes, CNRS

Parallel Session 4 Caudini

Advanced Preparation and Processing Techniques IV Chair: L. Battezzati

ISMANAM Rum 2018

10⁰⁰ **[ID-444] (Invited)** Indirect assessment of sample temperature in plasma environment during electric discharge assisted mechanical milling.

A. Calka, M. Wyszomirska, D. Wexle University of Wollongong

10³⁰ [ID-353] The structure of " $V_4Nb_{18}O_{55}$ " metastable ternary oxide compound prepared by extended ball milling of V_2O_5 and Nb_2O_5 powders and thermal treatment.

S. Enzo¹, A. Iacomini¹, N. Senes¹, A. Santoru², S. Garroni³, C. Pistidda², G. Mulas¹ ¹ University of Sassari

² Helmholtz-Zentrum Geesthacht GmbH

- ³ University of Burgos
- 10⁴⁵ [ID-47] In-situ dispersed La oxides of Al6061 composites by mechanical alloying.

C.-L. Chen, C-H Lin

Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan

11⁰⁰ Coffee Break

Parallel Session 1 Auditorium

Nanostructured Materials X Chair: J.M. Greneche

11³⁰ **[ID-425]** In-situ compression of hollow BN nanoparticles in a high-resolution transmission electron microscope.

K. Firestein¹, A. Kovalskii², A. Bondarev², D. Shtansky², D. Golberg¹ ¹ School of Chemistry, Physics and Mechanical Engineering, Queensland University of Technology (QUT), Brisbane, Queensland 4000, Australia. ² National University of Science and Technology (NUST) "MISiS"

11⁴⁵ **[ID-188]** Amorphous TiAl freestanding thin films studied by in-situ TEM.

C. Ebner¹, R. Sarkar², J. Rajagopalan², <u>C. Rentenberger¹</u> ¹University of Vienna, Faculty of Physics, Physics of Nanostructured Materials ²Arizona State University, Department of Materials Science and Engineering, School for Engineering of Matter, Trans- port and Energy



12⁰⁰ **[ID-390]** Effect of biaxial cyclic severe deformation on structure and properties of Ti-Ni alloys.

<u>V. Komarov</u>¹, I. Khmelevskaya¹, S. Prokoshkin¹, M. Isaenkova², M. Zaripova², R. Kawalla³, G. Korpala³

¹ National University of Science and Technology "MISiS"

² National Research Nuclear University MEPhI

³ TU Bergakademie Freiberg

12¹⁵ [ID-409] Interface polarized charge transfer in half-metal / semiconductors nanocomposites.

<u>O. Pana</u>, M. Stefan, M-L Soran, A. Popa, S. Gutoiu, D. Toloman, S. Macavei, C. Leostean

National Institute for Research and Development of Isotopic and Molecular Technologies

12³⁰ **[ID-419]** Microstructure, hardness and their thermal stability in electrodeposited nanocrystalline Ni layers with different Mo content.

G. Kapoor¹, L. Peter², N.Q. Chinh¹, J. Gubicza¹

¹ Eötvös Loránd University

² Hungarian Academy of Sciences, Budapest, Hungary

12⁴⁵ **[ID-326]** On precipitation of icosahedral nanoquasicrystalline phase in Hf-Cu-Ni amorphous alloys.

A. Khond¹, A. Babu², B. Majumdar², J. Bhatt¹, A.K. Srivastav¹

¹ Department of Metallurgical and Materials Engineering, Visvesvaraya National Institute of Technology, Nagpur (India)

² Defence Metallurgical Research Laboratory, Kanchanbagh, Hyderabad (India)

Parallel Session 2 Accademia

Metallic Glasses X Chair: S. Hosokawa

11³⁰ **[ID-365]** Cryogenic thermal and mechanical processing of Ti-Ni-Cu-Zr based crystal/glassy alloys.

J. Jiang¹, D. Louzguine-Luzgin², H. Kato¹ ⁷ Tohoku University, IMR ² Tohoku University, WPI-AIMR

11⁴⁵ **[ID-457]** Two-way structural tuning of the ordering states in a metallic glass.

H. Lou, Q. Zeng

Center for High Pressure Science and Technology Advanced Research

12⁰⁰ [ID-218] Characterization of the stress-temperature-time relaxation spectrum of metallic glasses.

E. Pineda¹, F. Yang²

¹ Departament de Física, Universitat Politècnica de Catalunya ² Institut für Materialphysik im Weltraum, Deutsches Zentrum für Luft- und Raumfahrt (DLR)

12¹⁵ [ID-184] Evaluating metallic glasses as research areas using bibliometric maps and indicators.

D.H. Milanez¹, E.C.M. Noyons², W.J. Botta¹, C.S. Kiminami¹ ¹ Federal University of São Carlos ² Leiden University

12³⁰ [ID-342] Transition from decagonal to icosahedral structure resulted by Co to Fe substitution in Al-Cu-Co-Fe alloys.

D. Shulyatev¹, M. Klyeva¹, N. Andreev¹, N. Tabachkova¹, A. Suslov², T. Sviridova¹ ¹NUST MISIS, Leninskiy prosp, 4, Moscow, Russia ² National High Magnetic Field Laboratory, Tallahassee, Florida

12⁴⁵ [ID-282] Crystallization of Cu-Zr thin film metallic glass via femtosecond laser heating.

J. Antonowicz¹, R. Sobierajski², P. Zalden³, K. Sokolowski-Tinten⁴, A. Pietnoczka¹, M. Chaika², P. Dłu ewski², M.T. Klepka², D. Klinger², R. Minikayev², K. Fronc², M. Choinacki², O. Magnussen⁵, Ch. Lemke, K. Georgarakis⁶, L. Greer⁷, U. Ruett⁸, K.

Perumal⁸, J. Warias⁵, B. Murphy⁵

- ¹ Warsaw University of Technology, Poland
- ² Institute of Physics. Polish Academy of Sciences, Poland
- ³ Universitaet Hamburg, Germany
- ⁴ Universitaet Duisburg-Essen, Germany
- ⁵ Christian-Albrechts-Universitaet Kiel, Germany
- ⁶ Cranfield University, United Kingdom
- ⁷ Department of Materials Science & Metallurgy, University of Cambridge
- ⁸ Deutsches Elektronen-Synchrotron, Germany

Parallel Session 3 Taurini

Phase Transformation II Chair: M. Kaufman

11³⁰ [ID-123] Structure and magnetic properties of Fe-Ga alloys doped by Tb.

V. Palacheva¹, I. Bobrikov², A. Balagurov², V. Cheverikin¹, I.S. Golovin¹ ¹ NUST MISiS

² Joint Institute for Nuclear Research



11⁴⁵ **[ID-452]** Preparation and characterization of novel Heusler type magnetic microwires.

<u>M. Ipatov</u>¹, V. Zhukova¹, P. Corte-Leon¹, T. Ryba², R. Varga², J. Gonzalez¹, A. Zhukov¹

¹ Dept. Phys. Mater., University of Basque Country, UPV/EHU San Sebastián, Spain ² Inst. Phys., Fac. Sci., UPJS, Park Angelinum 9, Kosice, Slovakia

12⁰⁰ [ID-301] Current annealing crystallization of Co-rich amorphous microwires for miniature hard-magnet applications.

M. Nematov¹, <u>A. Adam</u>¹, L. Panina¹, I. Baraban², A. Morchenko¹, V. Korovushkin¹, V. Rodionova²

¹ National University of Science and Technology, MISiS, Moscow, Russian Federation ² Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation

12¹⁵ [ID-481] Electronic transport properties as a tool to characterize phases of alloys and their changes.

N. Fazel, F. Gasser, <u>J-G Gasser</u>

Université de lorraine LCP-A2MC

12³⁰ **[ID-432]** Phase stabilisation and stress evolution in tantalum thin films deposited by magnetron sputtering.

A. Michel¹, J. Colin^{1,2}, G. Abadias^{1,2}, C. Jaouen²

- ¹ Institut Pprime, Département de Physique et Mécanique des Matériaux
- ² ENSMA, Département Physique et Mécanique des Matériaux
- 12⁴⁵ **[ID-107]** Synthesis of diamond like phase from supersaturated solid solution of nickel-carbon system prepared by high energy milling.

N. Kundan¹, B. Parida¹, A. Keshri², P.R. Soni¹

⁷ Department of Metallurgical and Materials Engineering, Malaviya National Institute of Technology, Jaipur, India

² Department of Materials Science and Engineering, Indian Institute of Technology Patna, India

Parallel Session 4 Caudini

Advanced Preparation and Processing Techniques V Chair: L. Gavioli

11³⁰ **[ID-203] (Invited)** New nanostructured composite materials with partially-carbonized elastomer matrix.

S. Kaloshkin National University of Science and Technology "MISIS"

12⁰⁰ **[ID-95]** Consolidation of the $Cu_{46}Zr_{42}Al_7Y_5$ (wt%) atomized amorphous powder alloy by hot extrusion.

R.D. Cava¹, E.M. Mazzer², C.S. Kiminami³, P. Gargarella³, C. Bolfarini³, W.J. Botta³, V.M. Pedrosa³

¹ University of West Joinville - Univille

- ² UFMG Federal University of Minas Gerais
- ³ UFSCar Federal University of São Carlos
- 12¹⁵ **[ID-151]** The influences of processing parameters on forming characterizations in the infrared heating type gas pressure forming system.

K-R Lim, Y-H Kim, K-S Lee, Y-S Na Korea Institute of Materials Science

12³⁰ **[ID-302]** Synthesis of manganese oxide nanoparticles for electrocatalysis applications using supercritical carbon dioxide.

<u>V. Zefirov</u>, I. Elmanovich, E. Levin, S. Abramchuk, E. Kharitonova, A. Khokhlov, M. Kondratenko, M Gallyamov Lomonosov Moscow State University

12⁴⁵ **[ID-45]** Mechanical investigation approach to optimize the HVOF Fe-based amorphous coatings reinforced by B4C nanoparticles.

B. Movahedi, M. Alamdaran

Department of Nanotechnology Engineering, Faculty of Advanced Sciences and Technologies, University of Isfahan

13⁰⁰ Lunch

THURSDAY 5 JULY

AFTERNOON

14³⁰ KEYNOTE – Applications and potential of 3D printing: from polymers to magnetic solid state materials.

Dieter Suess, Vienna University of Technology, Austria Auditorium

Chair: G. Barucca

Parallel Session 1 Auditorium

Magnetic, transport and optical properties from nanoscale to bulk IV Chair: P. Jonsson

15³⁰ **[ID-248] (Invited)** Artificial all-amorphous magnetic superstructures.

G. Muscas¹, R. Brucas²; P. Jönsson¹

¹ Uppsala University, Department of Physics and Astronomy

² Uppsala University, Department of Engineering Sciences

16⁰⁰ **[ID-263]** Optimization of magnetic properties in (Hf,Cr)-Co-B alloys by structural transformations.

<u>A. Musiał</u>¹ Z. Śniadecki¹, A. Klimametov², J. Ivanisenko², D. Wang², J. Kováč³, B. Idzikowski¹

¹ Institute of Molecular Physics, Polish Academy of Sciences

² Institute of Nanotechnology, Karlsruhe Institute of Technology

³ Institute of Experimental Physics, Slovak Academy of Sciences

16¹⁵ [ID-331] Correlation of magnetic and electrical properties of Co-rich amorphous ferromagnetic microwires after DC Joule heating treatment.

<u>S. Gudoshnikov</u>¹; V. Odintsov²; B. Liubimov²; S. Menshov²; A. Popovs²; V. Tarasov¹

¹ National University of Science and Technology «MISIS»

² Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation, Russian Academy of Sciences, IZMIRAN

16³⁰ **[ID-349]** Structure formation and magnetic properties of alloys based on Sm₂Fe₁₇N_x compound after severe plastic deformation by torsion.

I. Shchetinin¹, V. Menushenkov¹, R. Sundeev², A. Menushenkov³, M. Platunov⁴,

A. Rogalev⁴, A. Savchenko¹ ¹ National University of Science and Technology «MISiS»

² Moscow Technological University, «MIREA»

³ National Research Nuclear University «MEPhI»

⁴ European Synchrotron Radiation Facility (ESRF)

16⁴⁵ **[ID-377]** Giant magneto impedance effect in Co_{66.5}Fe_{3.5}Si_{12.0}B_{18.0} amorphous ribbons layered with Co film.

V. Vega¹, V.M. Prida¹, L. Domínguez², P. Corte-León³, M. Ipatov⁴, A. Chizhik³, V. Zhukova³, A. Zhukov³, B. Hernando¹,

J. González³

¹ University of Oviedo

² Department Applied Physics I, EUPDS, UPV/EHU

- ³ Department of Materials Physics, Faculty of Chemistry, University of the Basque Country
- ⁴ University of the Basque Country

Parallel Session 2 Accademia

Nanostructured Materials XI Chair: T. Sarkar

15³⁰ **[ID-280] (Invited)** Nanogranular materials obtained by gas phase synthesis: physical properties and multimodal multiscale metrology.

B. Giulio¹, F. Banfi², M. Van Bael¹, E. Cavaliere², <u>L. Gavioli</u>²

¹ Department of Physics and Astronomy, KU Leuven

² Department of Mathematics and Physics, Università Cattolica del Sacro Cuore

16⁰⁰ [ID-77] Preparation and characterization of Pt/C nanotubular heterostructures by a simple vapor deposition method.

E. Jiménez Marín¹, J.R.V. García²

¹ Depto. Ing. Metalurgia y Materiales, ESIQIE, Instituto Politécnico Nacional

² Centro de Nanociencias y Micro y Nanotecnologías del Instituto Politécnico Nacional

16¹⁵ **[ID-172]** Using phenol formaldehyde resin and organic compound vapors to synthesize graphite encapsulated nickel nanoparticles in an arc-discharge system.

Y-C Huang, M-H Teng National Taiwan University

16³⁰ [ID-150] Nano-structured CoCrFeMnNi high-entropy alloy produced by cryogenic multi-pass caliber rolling.

<u>J-W Won</u>, K-R Lim, Y-S Na

16⁴⁵ Parallel Session 3 *Taurini*

> Mechanical Properties II Chair: D. Barreca

ISMANAM LOR

15³⁰ [ID-216] (Invited) Comparing structural and mechanical properties of additive manufactured metallic parts after selected thermal treatments.

G. Barucca¹, E. Santecchia¹, A. Gatto², E. Bassoli², L. Denti², A. Rocchi¹, P. Menqucci¹

⁷ Dipartimento SIMAU, Università Politecnica delle Marche, Ancona, Italy ² Dipartimento DIEF, Università di Modenae Reggio Emilia, Modena, Italy

16⁰⁰ [ID-397] Mechanical properties of a hot rolled and annealed medium Mn automotive steel.

J.L. Hernandez Rivera¹, E.Palma-Elvira², S.Pacheco-Cedeño³, J.Cruz-Rivera², J.Garcia-Rocha², C.Garay-Reyes⁴

- ¹ Conacyt-Instituto De Metalurgia-Universidad Autonoma De San Luis Potosi
- ² Instituto de Metalurgia-Universidad Autonoma de San Luis Potosi
- ³ Instituto Tecnologico de Morelia
- ⁴ Centro de Investigación en Materiales Avanzados

16¹⁵ **[ID-213]** A heat treatable $TiB_2/AI_{3.5}Cu_{1.5}Mg_1Si$ composite fabricated by selective laser melting.

P. Wang¹, J. Eckert², S. Scudino¹

- ¹ Institute for Complex Materials, IFW Dresden, Dresden, Germany
- ² Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria

16³⁰

16⁴⁵

Parallel Session 4

Taurini

Applications I Chair: S. Enzo

15³⁰ **[ID-378] (Invited)** High strength Ti-based alloys for structural and biological applications.

D. Louzguine-Luzgin WPI Advanced Institute for Materials Research, Tohoku University

16⁰⁰ **[ID-285]** Tunable corrosion behavior of calcium phosphate coated Fe-Mn-Si alloys for bone implant applications.

R. Drevet, Y. Zhukova, P. Kadirov, S. Dubinskiy, A. Kazakbiev, Y. Pustov, S. Prokoshkin National University of Science and Technology "MISiS"

ISMANAM Rem 2018

16¹⁵ **[ID-497]** Biodetection of histamine in wine: magnetic versus plasmonic labels. A. Moyano¹, M. Salvador^{2,4}, J.C. Martínez-García², V. Socoliuc³, L. Vékás³, D. Peddis⁴, M. Fernández⁵, M. Rivas², M.C. Blanco-López¹ ¹ Departamento de Química Física y Analítica, Universidad de Oviedo, Spain ² Departamento de Física & IUTA, Universidad de Oviedo, Spain ³ National Institute R&D for Electrochemistry and Condensed Matter, Timisoara, Romania ⁴ Institute of Structure of Matter. National Research Council (CNR). Monterotondo Scalo (RM), Italy ⁵ Instituto de Productos Lácteos de Asturias, IPLA-CSIC, Villaviciosa, Spain 16³⁰ [ID-436] Study of the structure and functional properties of metastable beta Ti, Zr, Nb (at.%) alloy for biomedical applications subjected to combined thermomechanical treatment. V. Sheremetyev¹, A. Kudryashova¹, S. Galkin¹, S. Prokoshkin¹, V. Brailovski² ¹ National University of Science and Technology "MISIS" ² Ecole de Technologie Superieure 16⁴⁵ [ID-465] Structural Investigation of modified bitumens by physical chemistry techniques. C.O. Rossi¹, P. Calanra², M.P. De Santo³, B. Teltayev⁴, R. Angelico⁵ ¹ Department of Chemistry and Chemical Technologies, University of Calabria ² CNR-ISMN, National Council of Research ³ Department of Physics and CNR-Nanotec, University of Calabria ⁴ Kazakhstan Highway Research Institute ⁵ Department of Agricultural, Environmental and Food Sciences (DIAAA), University of Molise 1700 Coffee Break 1730 Poster Session IV 18³⁰ Close of day four Advanced Preparation and Processing Techniques Chair:T. Sarkar Investigations of V content, mechanical alloying and sintering on charac-[ID-49] C.-L. Chen teristics of tungsten-vanadium-yttria alloys. Microstructural aspects of ultra-high-strength FeCrMoV(W)C alloys fabri-[ID-59] U. Kuehn cated by selective laser melting. XRD, TEM and DTA studies of Li7La3Zr2O12 compound formed by mecha-[ID-186] M. Krasnowski nochemical and heat treatment processes. Plasma-assisted synthesis and characterization of Fe₂O₂-TiO₂-Au nano-[ID-193] D. Barreca materials for light-activated functional applications. Experimental and theoretical study of two Mn(II) molecular precursors for [ID-210] L. Bigiani chemical vapor deposition of Mn₃O₄ nanomaterials.

[ID-220]	C. Maccato	Tailored fabrication of upside-down ZnO nanopyramid arrays: synthesis and chemico-physical characterization.
[ID-310]	G. Gouveia	Solidification behaviour and mechanical properties of $\rm Al_x Cu_7 Si$ ultrafine eutectic alloys with different cooling rates.
[ID-384]	S. Marola	Development of new AI alloys specifically designed for Additive Manufacturing.
[ID-392]	G. Gorokh	Formation and complex studies of InSb nanowire sheaves in anodic alumina membranes.
[ID-399]	C. Santos	Influence of iron, milling time and sintering route on microstructure and corrosion behavior in SBF medium of mechanically alloyed Ni-Ti alloys.
[ID-413]	C. Santos	Microstructure and corrosion behavior in SBF medium of spark plasma sintered Ti-Zr-Si-B alloys.

Phase Transformation

[ID-328] J.S. Lee

[ID-338] S.J. Kwon

[ID-376] M.F. Alves

CI	hair: D. Mirabile Gatt	ia	
[ID-35]	HS.Yeh	Microstructure evolution and mechanical property of repair welded $\text{Cu}_{7.0}\text{Ni}_{1.75}\text{Si}_{0.5}\text{Cr}$ alloy.	
[ID-71]	O. Girin	Additional arguments in favor of the phenomenon of electrochemical phase formation in metals via a supercooled liquid state stage.	
[ID-89]	O. Nakonechna	Room-temperature mechanochemical synthesis of WC and $\mathrm{Mo_{2}C}$ carbides.	
[ID-111]	D. Janovszky	Phase transformation and morphology evolution of Ti50Cu25(Ni80Sn20)25 during mechanical milling.	
[ID-112]	M. Sveda	$\rm Ti_{50}Cu_{25}(Ni_{80}Sn_{20})_{25}$ amorphous/nanocrystalline powder produced by milling under -78 °C.	
[ID-142]	S. Borborema	Microstructure, mechanical properties and texture evolution of cold rolled and annealed $\rm Ti_{29}Nb_2Mo_6Zr$ titanium alloy for orthopedic application.	
[ID-143]	J. He	Ni-based metallic glass composites containing Cu-rich crystalline nano- spheres.	E hihr
[ID-265]	S.Y. Choi	Understanding correlation between mechanical property and color change of $\text{Cu}_{_{100\text{-}x}}\text{(AlNi)}_{x}$ alloys.	hindonid
[ID-267]	S.W. Park	Investigation on the relationship of the microstructure and mechanical properties by Mn addition in the Ti-Cr-Mn alloys.	Evto T
[ID-269]	P.H. Jin	Surface functionalization on porous $AI_{88}Cu_6Si_6$ alloy via two-step hybrid processes.	o m m nn n
[ID-290]	H.J. Park	Preparation of spherical TaNbHfZrTi high entropy alloy powder by hydro- genation-dehydrogenation reaction and thermal plasma treatment.	Dro
[ID-314]	H.G. Kim	Effect of cyclic heat treatment on commercially pure titanium part fabricat- ed by electron beam additive manufacturing.	

mechanical properties of Cu-Mn alloys.

entropy alloys.

(x= 2 and 6 at.%) alloys.

Study on the effect of boron on the mechanical properties of FCC high

Investigation of the effect of hot rolling process on the micro structure and

Effect of composition and milling time on microstructure and Vickers hard-

ness of mechanically alloyed and spark plasma sintered (67-x)Ti_xZn₂₂Si₁₁B

ISMANAM Rem 2018

[ID-414]	M. Matyunina	Ab initio investigation of Fe-Ge alloys.
[ID-459]	G. Fiore	Solidification microstructures in an undercooled eutectic Co-Si alloy.
[ID-478]	R. Caram	Phase transformation in Nb-modified Ti-5553 alloy during aging heat treatments.
Ce	eramic Materials	
Cł	nair: D. Mirabile Gatt	a
[ID-84]	M. Vallejo	Thermoluminescent respond of quantum dots in borate glasses.
[ID-103]	A. Mebrek	Characterization of Algerian DD3 Kaolin.
[ID-198]	A. Góral	Influence of powders morphology and standoff distance on the microstructure of $\rm Cr_3C_2-Ni_{20}Cr$ cold sprayed coatings.
[ID-337]	C. Santos	Synthesis and properties of ATZ ceramic composite obtained by mechan- ical alloying.
[ID-345]	A. Azzi	Studies of the sintering effect at different temperatures of hydroxyapatite.
[ID-358]	M.F. Alves	Sintering of mechanically alloyed TiC/Ti $_3$ SiC $_2$ ceramic composite.
[ID-362]	H. Rezzag	Sintering and characterization of ceramic based on DD3 kaolin.
[ID-380]	M.F. Alves	Microstructure and mechanical properties of spark plasma sintered WC- $_{6}Co_{x}B$ (x = 0.2 and 0.5 wt.%) ceramics.
[ID-388]	Y. Lupitskaya	Formation of compounds in the $Ag_2O-Sb_2-O_3-MoO_3$ system on heating.
[ID-408]	M. Abas	Effect of Ca2+ addition on structural and dielectric properties of pure Ba-TiO_3 lead free ceramic synthesized by Sol gel
[ID-415]	F. Milovich	Transport properties and structure of melt grown $\rm Sc_2O_3$ and $\rm CeO_2$ doped $\rm ZrO_2$ crystals.
[ID-447]	J. Vacik	Study of Ti_2AIC nanolaminate irradiated with high-fluence ions.



FRIDAY 6 July

MORNING

08³⁰ PLENARY – Self assembly of carbon-based materials from nano-to macro-scale: when enemies become friends. Vincenzo Palermo, ISOF-CNR, Italy *Auditorium* Chair: S. Laureti Parallel Session 1

Auditorium

Nanostructured Materials XII Chair: V. Palermo

9³⁰ **ID-418] (Invited)** Advances in two-dimensional planar spintronics.

M.V. Kamalakar Uppsala University

10⁰⁰ **[ID-372]** Manufacturing technique of graphene reinforced aluminum matrix nanocomposite.

H. Rudianto¹, S. Scudino², I. Dlouhy³

¹ Gunadarma University

² Leibniz Institute Dresden

³ Brno University of Technology

10¹⁵ [ID-393] Synthesis and characterization of graphite-encapsulated Au/Pt nanoparticles.

D. Ağaoğulları Istanbul Technical University

10³⁰ **[ID-351]** Obtaining and thermal stability of MnSi_{1.75} intermetallic compound processed by mechanical alloying.

I. Chicinas¹, V. Cebotari², T. F. Marina¹, F. Popa¹, B. V. Neamtu¹, R. Hirian³

¹ Departament of Materials Science and Engineering, Technical University of Cluj-Napoca

² Technical University of Cluj-Napoca

³ Faculty of Physics, Babes-Bolyai University, Cluj-Napoca, Romania

10⁴⁵ **[ID-317]** Behavior analysis of some composite polymers reinforced with metallic nanoparticles.

D. Gavrila¹, A. Caramitu², S. Mitrea², M. Enachescu¹, V. Stoian¹ ¹ Dept.of Physics, Univ."Politehnica", Bucharest ² ICPE-ca

Parallel Session 2 Accademia

Metallic Glasses XI Chair: P. Voyles

9³⁰ **[ID-118]** Confined glass transition in amorphous/amorphous metallic nanolayers.

<u>F. Spieckermann</u>¹, M. Mühlbacher¹, T. Schöberl², C. Gammer², C. Mitterer¹, D. Sopu³, J. Eckert¹

¹ University of Leoben, Austria

² Erich Schmid Institute for Materials Science, Austrian Academy of Sciences, Austria ³ Institute of Materials Science, TU Darmstadt, Germany

9⁴⁵ **[ID-120]** Enhancing the tensile ductility of bulk metallic glasses by designing structural heterogeneities.

<u>S. Scudino</u>¹, J. Bian², H.S. Shahabi³, D. Sopu⁴, J. Sort⁵, J. Eckert⁶, G. Liu² ⁷ *IFW Dresden*

- ² Xi'an Jiaotong University
- ³ Heraeus Deutschland GmbH & Co. KG
- ⁴ Institute of Materials Science, TU Darmstadt
- ⁵ ICREA and Departament de Física, Universitat Autònoma de Barcelona

⁶ Erich Schmid Institute of Materials Science, Austrian Academy of Sciences (ÖAW)

10⁰⁰ [ID-239] Structural features of binary amorphous Zr-TM and AI-TM alloys as an aid towards a better understanding of multinary bulk metallic glasses.

M. Stiehler, M. Jolly, K. Georgarakis

School of Aerospace, Transport and Manufacturing, Cranfield University, Cranfield MK43 0AL, UK

10¹⁵ [ID-336] Highly oriented ferromagnetic polymers based on Co-rich amorphous microwires.

V. Bautin¹, A. Seferyan¹, <u>E. Kostitsyna¹</u>, N. Perov², N. Usov¹

¹ National University of Science and Technology «MISiS»

² Faculty of Physics, Lomonosov Moscow State University

10³⁰ [ID-287] Size-dependent transition in the failure mode of brittle metallic glass.

R. Qu¹, D. Tönnies¹, Z. Liu², Z. Zhang², C. Volkert¹

¹ Institute of Materials Physics, University of Göttingen

² Institute of Metal Research, Chinese Academy of Sciences

10 ⁴⁵	[ID-241] A study of structural evolution of a Pd based metallic glass using fluctuation electron microscopy
	L. Tian, D. Tönnies, V. Roddatis, C. Volkert University of Göttingen
	Parallel Session 3 Taurini
	Mechanical Properties III Chair: Z. Wang
9 ³⁰	[ID-37] Elastic and Anelastic behavior of small dimensioned Aluminum.
	E. Campari ¹ , E. Bonetti ¹ , S. Amadori ¹ , R. Berti ¹ , R. Montanari ² [†] Dipartimento di Fisica ed Astronomia Università di Bologna ² Università degli Studi di Roma TorVergata
9 ⁴⁵	[ID-205] Mechanical properties of bulk metallic glasses and composites.
	L. Krämer ¹ , V. Maier-Kiener ² , Y. Champion ³ , R. Pippan ¹ ⁷ Erich Schmid Institute of Materials Science, OEAW ² Department Physical Metallurgy and Materials Testing, Montanuniversität Leoben ³ Univ. Grenoble Alpes, CNRS, Grenoble INP, SIMaP
1000	[ID-156] A novel numerical approach to simulate 3D printing material.
	S. Abid ^{1,2} , T. Hassine ¹ , H. Nouri, M-F Lacrampe ² , H. Daly ¹ ⁷ LMS, ENISo, Université de Sousse, Tunisie ² TPCIM, Mines Douai, Lille 1, France
10 ¹⁵	[ID-406] In situ micro-cantilever tests to study fracture behavior of magnesium reinforced with carbon nanotubes by an alternative technique.
	C. Merino ¹ , J. Ramírez ² , J. Meza ³ , J. Rudas ⁴ ⁷ Institución Universitaria Pascual Bravo ² Centro de Investigación en Materiales Avanzados (CIMAV) ³ Universidad Nacional de Colombia - Medellín ⁴ Institución Universitaria Pascual Bravo, Grupo GIIEN
10 ³⁰	[ID-297] Effect of direct addition of $Y_2Ti_2O_7$, $Y_2Zr_2O_7$ and $Y_2Hf_2O_7$ on mechanical behavior of austenitic ODS SS316L steels.
	<u>K. Gothandapani,</u> B.S. Murty <i>IIT Madras</i>
10 ⁴⁵	

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	Parallel Session 4 Caudini
	Phase Transformation III Chair: M. Kaufmann
9 ³⁰	[Id-144] Existence of recrystallized and seaweed structures in rapidly solidified Ni ₃ Ge intermetallic.
	<u>N. Haque</u> , R.F. Cochrane, A.M. Mullis University of Leeds, UK
9 ⁴⁵	[ID-262] Study of colour and mechanical property by trasition of Mg_2Si to Si phase distribution and ratio of Al-based blue colour alloy.
	<u>S. Mun, K-B Kim</u> , S-Y Choi, H-J Park, S-H Hong, Y-S Kim, S-J Kwon, S-W Park Sejong University
10 00	[ID-329] Effect of nitrogen on the mechanical properties of FCC high entropy alloys. novel numerical approach to simulate 3D printing material.
	J-S Lee ¹ , K-N Yoon ¹ , H-S Oh ² , S-J Kim ¹ , E-S Park ¹ ⁷ Seoul National University ² Research Institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University
10 ¹⁵	[ID-339] Effect of cooling rate on the microstructure and mechanical property of commercial grey iron rapidly cooled in Nitrogen and Helium.
	<u>O. Oloyede, N. Haque, R. Cochrane, A. Mullis</u> University of Leeds, UK
10 ³⁰	 [ID-476] Alpha phase precipitation in Ti-Mo alloys with Sn addition during aging heat treatment. M.G. de Mello, <u>R. Caram</u> University of Campinas
10 ⁴⁵	[ID-446] A kinetics-based model for prediction of final phases in equiatomic High Entropy Alloys.
	C. Chattopadhyay, A. Prasad, B.S. Murty
1100	Coffee Break
	Parallel Session 1 Auditorium
	Nanostructured Materials XIII Chair: D. Mirabile Gattia

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11³⁰ **[ID-441]** Processing of high strength Al alloy composites reinforced with functionalized multi-walled carbon nanotubes (MWCNT).

E.M. Mazzer¹, M.C.C. Souza², M.D.V. Felisberto³, Ì. Martins³, T.H.R. da Cunha³ ⁷ Department of Metallurgical and Materials Engineering, Universidade Federal de Minas Gerais

² Microscopy Center, Federal University of Minas Gerais,

³ Center of Technology in Nanomaterials- CTNano, Technological Park of Belo Horizonte-BHTec,

11⁴⁵ **[ID-442]** Production and characterization of VO_x nanostructured thin films.

<u>A. D'Elia</u>¹, M. Coreno², C. Cepek³, C. Spezzani⁴, M. de Simone³, A. Marcelli^{2,5}, P. Piseri⁶

- ¹ University of Trieste/IOM-CNR
- ² ISM-CNR, Istituto di Struttura della Materiali
- ³ IOM-CNR, Istituto Officina dei Materiali
- ⁴ Elettra Synchrotron Light Source
- ⁵ LNF-INFN, RICMASS, Rome International Center for Materials Science Superstripes
- ⁶ CIMalNa, Dipartimento di Fisica, Universita di Milano
- 12⁰⁰ [ID-75] Effect of Aluminium content on oxidation behavior of arc melted Al_xCo-CrFeNi (x=0,0.3,0.6,1 mole) high entropy alloys exposed at 1150°C and comparison with nanocrystalline Al_{0.6}CoCrFeNi high entropy alloy.

R. Bhattacharya¹, B.S. Murty¹, D. Fabijanic², M. Annasamy², M. Kamaraj¹, P. Hodoson²

¹ Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India

² Institute for Frontier Materials, Deakin University Australia, Waurn Ponds, Geelong VIC, Australia

12¹⁵ **[ID-92]** Development of P-free Fe-Si-B-Cu soft magnetic nanocrystalline alloys with high Cu concentrations.

Y. Li, Xingjie JiaNone, X. RenNone, W. Zhang, G. XieNone Dalian University of Technology

12³⁰ [ID-115] Effects of Mg content and annealing temperature on electrical and optical properties of ITO/AgMg films.

<u>H.K. Lin</u>, Y.J. Huang

National Pingtung University of Science and Technology

12⁴⁵

Parallel Session	2
Accademia	

Metallic Glasses XII Chair: B.S. Murthy

11³⁰ **[ID-93]** Serrated flow during inhomogeneous deformation of bulk metallic glasses: from self-organized critical to chaotic dynamics.

M. Khanouki¹, R. Tavakoli², H. Aashuri²

¹ Sharif University of Technology

² Materials Science and Engineering Department, Sharif University of Technology

11⁴⁵ **[ID-360]** Creating single element metallic glasses from molecular dynamics simulations.

J. Bean¹, L. Greer²

¹ University of Cambridge ² Department of Materials Science & Metallurgy, University of Cambridge

12⁰⁰ **[ID-371]** Comparative analysis of thermodynamically predicted glass forming compositions with amorphous Ca-Mg-Cu alloy system.

A.A. Deshmukha¹, U. A. Palikundwar¹, A.A. Khond², <u>J. Bhatt²</u>

¹ X-Ray Research Laboratory, Department of Physics, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, India

² Department of Metallurgical and Materials Engineering, Visvesvaraya National Institute of Technology., Nagpur, India

12¹⁵ **[ID-403]** Measurement of the internal shear stress by nanoindentation tests in plastically deformed $Zr_{44}Ti_{11}Cu_{10}Ni_{10}Be_{25}$ bulk metallic glass.

Z. Kovács¹, M. Abas², J. Lendvai¹

 ¹ Department of Materials Physics, Eötvös University, Budapest, Budapest, Hungary
 ² Metallurgy and material science test lab (MMST), physics department, Faculty of Science, South Valley University, Qena, Egypt

12³⁰ [ID-430] The role of topologically closed-packed structures in the phase transitions of Ta.

Z. Wu¹, Y. Mo², Y. Liang³, Q. Xie³, Z. Tian¹

¹ School of Physics and Electronics, Hunan University, Changsha, China
 ² School of electronic and communication engineering, Changsha University, Changsha, China
 ³ School of Big Data and information engineering, Guizhou University, China

12⁴⁵

Parallel Session 3 Taurini

Mechanical Properties IV Chair: E. Campari

11³⁰ [ID-69] (Invited) Ti-based metallic glasses reinforced AI alloy matrix composites.

Z. Wang¹, W. Zhang¹, K. Prashanth², C. Suryanarayana³

¹ National Engineering Research Center of Near-net-shape Forming for Metallic Materials, South China University of Technology

² Department of Manufacturing and Civil Engineering, Norwegian University of Science and Technology

³ Department of Mechanical and Aerospace Engineering, University of Central Florida

12⁰⁰ **[ID-129]** Fatigue properties of nanocrystalline Cu films on a flexible substrate.

B. Zhang

Key Laboratory for Anisotropy and Texture of Materials, Ministry of Education, School of Materials Science and Engineering, Northeastern University

12¹⁵ **[ID-146]** Development of a titanium metastable alloy with promising mechanical properties for self-expansible stent applications.

A.H. Plaine, M.R. da Silva, C. Bolfarini

Federal University of São Carlos

12 ³⁰	
12 ⁴⁵	
	Parallel Session 4 Caudini
	Applications II Chair: M. Salvador-Fernandez
11 ³⁰	[ID-482] Selective oxidation of benzyl alcohol catalyzed by CeO_2 -nanorods supported palladium.
	S. S. Moeini ¹ , D. Tofani ¹ , I. Luisetto ² , S. Tuti ² ¹ Laboratory of Organic Chemistry, Department of Science, University of Roma Tre, Rome, Italy
	² Laboratory of Chemistry of Materials with Catalytic Properties, Department of Science, University of Roma Tre, Rome, Italy
11 ⁴⁵	[ID-160] Influence of the correction to the Wills-Harrison approach on the ther- modynamics of liquid transition-metal binary alloys.
	N. Dubinin Institute of Metallurgy of the Ural Branch of the Russian Academy of Sciences

12⁰⁰ **[ID-202]** Local structure near a Ni atom in a rapidly quenched Al_{0.3}CrFeCoNi high entropy alloy.

T. Yamamoto¹, R. Shioda¹, J. Niki¹, Y. Ebisu², K. Kimura³, K. Hayashi³, N. Happo⁴, S. Hosokawa⁵, T. Hiroo⁶, T. Ozaki²

¹ Utsunomiya University

- ² Hiroshima Institute of Technology
- ³ Nagoya Institute of Technology
- ⁴ Hiroshima City University
- ^₅ Kumamoto University
- ⁶ JASRI/SPring-8
- 12¹⁵ **[ID-375]** Thermoluminescence of carbon quantum dots doped aluminium oxide exposed to X ray and UV radiation.

C. Gomez Solís, M. Hernández, J. Alvarado, M. Aquino, P. Ramírez Universidad de Guanajuato

12³⁰ [ID-313] Effect of Ag decorated MWCNTs on mechanical reliability of Sn-58wt%Bi solder.

C-J Lee, K-D Min, H-J Park, S-B Jung SungKyunKwan University

12 ⁴⁵	
1300	Lunch

FRIDAY 6 JULY

	Parallel Session 1 Auditorium
	Nanostructured Materials XIV Chair: A. D'Elia
14 ³⁰	[ID-266] Impact of the additives stoichiometry on the properties of HAp/TiO _y nanocomposite.
	<u>S. Rempel</u> ^{1,2} , A. Valeeva ^{1,2} , D. Eselevich ¹ , A. Rempel ¹ ¹ Institute of Solid State Chemistry, Ural Branch of the RAS ² Ural Federal University named after the First President of Russia B.N. Eltsin
14 ⁴⁵	[ID-268] Adsorption of xanthine on citrate-stabilized gold nanoparticles.
	S. Caporali¹, F. Muniz-Miranda², <u>M. Muniz-Miranda</u>¹ ¹ Department of Chemistry "Ugo Schiff", University of Florence, Via Lastruccia 3, 50019 Sesto Fiorentino, Italy ² Center for Molecular Modeling (CMM), Ghent University
15ºº	[ID-298] Synthesis of nickel ferrite by CTAB assisted hydrolytic stripping. A.J. Muñiz, E.G.P. Beas Instituto Politécnico Nacional-ESIQIE, Depto. de Ingeniería en Metalurgia y Materiales
15 ¹⁵	
	Parallel Session 2 Accademia
	Metallic Glasses XIII Chair: J. Bhatt
14 ³⁰	[ID-471] Effect of ultrasonic vibration on the microstructure and mechanical properties of a Zr-based bulk metallic glass.
	<u>S. Li</u>
14 ⁴⁵	[ID-189] Characterization of heterogeneities in a CuZr based bulk metallic glass after high pressure torsion deformation.
	C. Ebner ¹ , B. Escher ² , S. Noisternig ¹ , C. Gammer ³ , J. Eckert ¹ , S. Pauly ² , C. Rent-
	¹ Physics of Nanostructured Materials, University of Vienna ² Institute for Complex Materials, IFW Dresden
	[°] Erich Schmid Institute for Materials Science, Austrian Academy of Sciences

ISMANAM Rum 2018

15⁰⁰ **[ID-176]** Magic oxygen in metallic glasses: tuning Cu-Ag porous nanomembrane into nanoporous Ag-Cu@Ag core-shell alloy.

X. Liu¹, K-F Yao²

¹ Institute of Materials, China Academy of Engineering Physics

² Tsinghua University

15¹⁵ [ID-402] Nonlinear metallic glass flat springs.

<u>N.T. Panagiotopoulos</u>¹, K. Georgarakis², A.M. Jorge Jr³, A.L. Greer¹, W.J. Botta³, A.R. Yavari⁴

- ¹ University of Cambridge, Department of Materials Science & Metallurgy, Cambridge, UK
- ² School of Aerospace, Transport and Manufacturing, Cranfield University, Cranfield, UK
- ³ Federal University of São Carlos, DEMa, São Paulo, Brazil
- ⁴ SIMaP, CNRS UMR 5266, Institut Polytechnique de Grenoble, St-Martin d'Heres, France

	Parallel Session 3 Taurini
	Mechanical Properties V and Applications III Chair: P. Konda Gokuldoss
14 ³⁰	[ID-68] Ductility improvement mechanism of pure titanium with oxygen solid solution after water quenching.
	S. Kariya ¹ , S. Kariya ¹ , J. Umeda ² , K. Kondoh ² ¹ Graduate school of Engineering, Osaka University ² Joining and Welding Research Institute, Osaka University
14 ⁴⁵	[ID-460] Hydrogen diffusivity and solubility and interaction with microstructure of $Fe_{20}Mn_{20}Ni_{20}Co_{20}Cr_{20}$ and $Fe_{22}Mn_{40}Ni_{30}Co_{6}Cr_{2}$ high entropy alloys.
	A. Castilho, D. Santos, J. Belo, <u>S. Marques</u> PENT-COPPE/UFRJ
1500	[ID-39] SnO ₂ coatings on 304 stainless steel for corrosion protection. <u>A. Gutiérrez</u> ¹ , J. Salcedo ² , Á. Ramírez ³ , G. Ramírez ³ , V. García ³ ¹ Centro de Investigación e Innovación Tecnológica. Instituto Politécnico Nacional ² ESIQIE. IPN ³ CIITEC. IPN
15 ¹⁵	[ID-199] Ti substituted alumina dispersion-strengthened Cu alloy fabricated via internal oxidation. J.H. Ahn ¹ , S.Z. Han ¹ , E-A Choi ¹ , S.H. Lim ² , J. Lee ³ , K. Kim ⁴ ⁷ Korea Institute of Materials and Science ² Kangwon National University ³ Changwon National University ⁴ Pusan National University
15 ⁴⁵	Closing Remarks

ISMANAM LOT

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AlMagn organizes its national congress every two years. Magnet 2009 was held in Rome, and during the Magnet 2011 in Turin the AlMagn association was constituted. Subsequently, the Magnet congresses were held in Naples in 2013 and in Bologna in 2015.



INSTM http://www.instm.it/en/instm.aspx

INSTM, the National Interuniversity Consortium of Materials Science and Technology, is the largest consortium of its kind in Italy, drawing on the expertise of no less than 49 universities – and all those that are active in Italy in researching advanced materials and technologies. The individual universities' voluntary

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SOCIAL EVENTS

CONFERENCE DINNER

The Conference Dinner will take place on July 4th at *Palazzo Naiadi – The Dedica Antology Restaurant,* a prestigious location in the heart of the Eternal City and at 20 minutes walking distance from the conference location.

The restaurant offers traditional Italian dishes with flavor of new cuisine served in a beautiful terrace furnished with taste and elegance. Thanks to its strategic position, it is possible to enjoy an exclusive panoramic view of the city of Rome and its main monuments.

The terrace is set in an impressive white marble building from the 1800s, Palazzo Naiadi located in Piazza della Repubblica, next to Repubblica Metro Station and surrounded by fashion boutiques and bars. The great location is walking distance from Colosseo, Piazza Navona and Fontana di Trevi.

All participants and companion are invited to participate; the cost is 60 euros. Information and booking are available at the registration desk (Tours/Social Event Desk)









SPECIAL TOURS

The following tours at special prices are proposed for the ISMANAM2018 participants. Tickets can be bought at the registration desk (Tours/Social Event Desk).

Companions (early/late) can choose 2 proposed tours for free (tickets included).

Sunday, July 1st

MUSEI CAPITOLINI, 16.50€

from 4 pm to 6 pm

The Capitoline Museums (Musei Capitolini) located in the heart of the city (in Piazza del Campidoglio) offer an impressive collection of Roman paintings and sculptures, leaving visitors speechless. The museum was the result of the donation of a collection of valuable bronzes by Pope Sixtus IV in 1471 to the citizens of Rome, making them the oldest museums in the world.

An English-speaking guide will welcome to the Conference Participants in the afternoon before the Welcome Party, that will be placed at a walking distance from Musei Capitolini.

The cost for the ticket is 16.50€/person to be paid directly to the guide, before entering the Museum. The tour will take 2 hours; the appointment is at 15.50 at Piazza Del Campidoglio.



After the tour, the way to reach the Welcome Party (Angelicum Chiostrum) will be easily indicated by the guide.

Monday, July 2nd ROME BY NIGHT – The Eternal Image of Opulence 12€

from 8pm to 11pm, walking tour

Mistress of poets, writers and intellectual from all over the world, Rome was designed to conquer the visitor with its sophistication, culture and ideas. From the plains of the field of Mars, you will ascend to the tallest hill to embrace the city in an unexpected glance, where the summer breeze, the water of the fountains, the immemorial stones and the gleaming lights will offer you a most memorable welcome to the City. (Piazza del Popolo – Piazza di Spagna – Fontana di Trevi – Palazzo Quirinale – Piazza Barberini – Fontana Mosè – Terme di Diocleziano – Piazza della Repubblica)

English speaking guide – meeting at 7.50 pm at Metro Flaminio – 12€/person



Piazza di Spagna

Fontana di Trevi

Piazza della Repubblica

Tuesday, July 3rd and Thursday, July 5th SUNSET IN ROME – *The Eternal Image of Power*, 12€

from 5pm to 8pm, walking tour

Rome is the eternal city. Absorbing from the periphery and shining from its centre, in this tour you will embark on a journey to discover how the Pharaohs, the Emperors and the Popes wove an over 2000-year-old tapestry of magnificence. (S. Giovanni in Laterano, Colosseo, Fori Imperiali, Campidoglio, Piazza Venezia, Pantheon)

English speaking guide – meeting at 16.50 p.m. at Metro S. Giovanni - 12€/person

Note: The tour does not include the visit into the Colosseum



Pantheon

Piazza Venezia

View of Colosseo

Wednesday, July 4th GALLERIA BORGHESE, 16.50 €/

from 11 am to 1 pm

The Galleria Borghese's collection, which was called the most beautiful collection in the world, is still housed in the place that was planned and created for it, in a kind of dream of a museum ante litteram. The collection was assembled beginning in1607 by Cardinal Scipione Caffarelli Borghese (1577-1633) and consisted of paintings by Caravaggio, Titian, and Raphael, while the collection of ancient sculptures – another fundamental element capable of conferring an aura of ideal universality on art collections – was constantly expanding. The magnificence of the archaeological marbles was rivaled by the extraordinary novelty of the "modern" statuary, which was in constant competition with the classical models. From 1615 to 1623 the young Gian Lorenzo Bernini executed for the cardinal his famous sculptural groups, which are still housed in the Galleria Borghese: the Aeneas and Anchises, the Rape of Proserpina, the David, and the Apollo and Daphne. Placed in the middle of every room, they link the entire decorative theme to their iconographic nucleus of the sculptural group and have never been moved.

English speaking guide – meeting at 10.15 am at the Galleria Borghese entrance – 16.50 \notin /person

Tickets are LIMITED



Galleria Borghese



Roma, 2-6 July 2018

25TH INTERNATIONAL SYMPOSIUM ON METASTABLE, AMORPHOUS AND NANOSTRUCTURED MATERIALS