

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
METASTABLE AND NANOSTRUCTURED MATERIALS



BROTAS . SP | BRAZIL
MARCH 19 to 22 | 2017

NANOMAT 2017

Hotel Fazenda Areia que Canta, Brotas – SP, Brazil

March 19 to 22 / 2017



Final Program

Conference Chairmen:

Piter Gargarella and Ricardo Floriano

*Federal University of São Carlos, UFSCar
Department of Materials Engineering, DEMa*

*State University of Campinas, UNICAMP
School of Applied Sciences, FCA*

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Important Information:

- **English** is the official language of the Conference.
- Presentations should be made clearly in English.
- Posters should be made in English and follow the required dimensions listed below.

Presentation Time and Poster Dimensions:

Plenary Talk: 25 min (+5 min discussion time)

Invited Talk: 15 min (+5 min discussion time)

Oral Regular: 10 min (+5 min discussion time)

Poster **maximum** size: *90 cm width x 120 cm height*

NANOMAT2017

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SUNDAY, 19/03/2017

14h – 18h: Registration

17h30: Opening Session

Session 1 (17h45 – 19h25):
Applications of Metastable and Nanostructured Materials

Chair: Walter José Botta Filho / UFSCAR

17h45: Opening lecture – Akihisa Inoue, Tohoku University, Japan
“Attractiveness and Commercialization of Zr- and Fe-based Bulk Metallic Glasses”

18h30: Invited talk - Thomas J. Webster, Northeastern University, USA
“15 Years of Commercializing Medical Devices Using Nanotechnology”

18h50: Invited talk - Michael Joseph Kaufman, Colorado School of Mines, USA
"Strategies For Producing Structural, High-Temperature Aluminum Alloys Using Rapid Solidification Methods"

19h10: Regular talk - Juliano Soyama, Universidade Federal do ABC, Brazil
“Microstructure formation and wear resistance of spray formed duplex steels containing boron”

19h30 – 22h: Conference Cocktail

(The registration continues on Monday morning 20th)

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
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MONDAY, 20/03/2017

Session 2 (8:30 – 10:35):
Severe Plastic Deformation

Chair: Alberto Moreira Jorge Júnior / UFSCAR

8h30: Plenary talk - Terence G. Langdon, University of Southampton, United Kingdom
“Using severe plastic deformation to fabricate strong metal matrix composites”

9h00: Plenary talk - Zenji Horita, Kyushu University, Japan
“Upsizing of Severe Plastic Deformation Process under High Pressure”

9h30: Invited talk - Roberto B. Figueiredo, Universidade Federal de Minas Gerais, Brazil
“Microstructure and Hardness Evolution in Magnesium Processed by HPT”

9h50: Regular talk - J.M. Cubero-Sesin, Escuela de Ciencia e Ingeniería de Materiales, Costa Rica
“Superplasticity of Ti-6Al-7Nb Alloys with Different Initial Microstructures Processed by High-Pressure Torsion”

10h05: Regular talk - Mariana Calin, Leibniz Institute for Solid State and Materials Research, Germany
“Nanostructured biocompatible Ti-Nb alloys processed by severe plastic deformation”

10h20: Regular talk - Guilherme Zepon, Universidade Federal de São Carlos, Brazil
“Characterization and Hydrogen Storage Behavior of High Entropy Alloys of the Mg-Zr-Ti-Fe-Ni-Co system”

10h35 - 11h: Coffee-Break

NANOMAT2017

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MONDAY, 20/03/2017

Session 3 (11h – 12h40):
Nanostructured Polymers and Composites

Chair: Ricardo Nogueira / The Petroleum Institute

11h00: Plenary talk - Luiz A. Pessan, Universidade Federal de São Carlos, Brazil
"Highly filled synthetic clay-polymer nanocomposites produced by self-assembly techniques"

11h30: Invited talk - Carlos Henrique Scuracchio, Universidade Federal de São Carlos, Brazil
"Morphological and Electromechanical Characterization of Artificial Muscles Based on Ionomeric Polymer-Metal Composites (IPMC)"

11h50: Invited talk - Glaura Goulart Silva, Universidade Federal de Minas Gerais, Brazil
"Low dimension AL fillers for nanostructured composites"

12h10: Regular talk - Everaldo C. Venancio, Universidade Federal do ABC, Brazil
"Synthesis and Characterization of Polyaniline/Graphene Oxide Nanocomposite"

12h25: Regular talk - Antonio F. Avila, Universidade Federal de Minas Gerais, Brazil
"From Molecular Vibration to Mechanical Properties: The Carbon Fiber/Epoxy Nano-Modified Composites Investigation"

12h40 - 14h: Lunch Break

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
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MONDAY, 20/03/2017

Session 4 (14h – 15h55):
Structure and Properties of Glasses

Chair: Claudio Shyinti Kiminami / UFSCAR

14h00: Plenary talk - A. L. Greer, University of Cambridge, United Kingdom
“Extending the Range of the Glassy State: Insights from Metallic Glasses”

14h30: Invited talk - Edgar Dutra Zanotto, Universidade Federal de São Carlos, Brazil
“Why certain glass forming liquids “never” crystallize?”

14h50: Invited talk - Nicoleta Lupu, National Institute of Research and Development for Technical Physics, Romania
“Microstructure and Soft Magnetic Properties Evolution Versus Milling Conditions for FINEMET Submicron Powders”

15h10: Regular talk - Conrado R.M. Afonso, Universidade Federal de São Carlos, Brazil
“HRTEM Unveiling In-situ Crystallization of Cu-Zr Glassy Thin Film obtained by Magnetron Sputtering”

15h25: Regular talk - Daria Barsuk, Université Grenoble Alpes, France
“Nanoporous copper from binary Cu-Ca amorphous precursor by simple dealloying in water”

15h40: Regular talk - Rafael Lattuada, Zeiss do Brasil
"Advances of Electron Microscopy and Ion Beam - Tools for Nanoconformation"

15h55 – 16h30: Coffee-Break

16h30 - 18h: Poster Session I

18h - 21h: Happy Hour

NANOMAT2017

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TUESDAY, 21/03/2017

Session 5 (8h30 – 10h35):
Metallic Glasses and Composites

Chair: Piter Gargarella / UFSCAR

8h30: Plenary talk - Jürgen Eckert, Montanuniversität, Austria

“Perspectives on Structure Formation and Plasticity Improvement in Metallic Glasses”

9h00: Invited talk - Yannick Champion, Laboratoire SIMAP, France

“Deformation dynamics in Mg based metallic glass described by Poisson statistics”

9h20: Invited talk - Simon Pauly, Leibniz Institute for Solid State and Materials Research, Germany

“Bulk metallic glasses: Processing and shape memory composites”

9h40: Invited talk - Marcelo Falcão de Oliveira, Universidade de São Paulo, Brazil

"Evaluation of the glass-forming ability of alloys by molecular dynamics simulations"

10h00: Invited talk - Luis Cesar Rodriguez Aliaga, Universidade do Estado do Rio de Janeiro, Brazil

"Molecular Dynamics Simulations on Glass Forming Ability and Mechanical Properties of Both Cu-Zr-(Al, Ti) and Cu-Ni Metallic Glasses"

10h20: Regular talk - Konrad Kosiba, Leibniz Institute for Solid State and Materials Research, Germany

“Designing the microstructure and mechanical properties of bulk metallic glass matrix composites by flash-annealing”

10h35min – 11h00min: Coffee-Break

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
METASTABLE AND NANOSTRUCTURED MATERIALS



TUESDAY, 21/03/2017

Session 6 (11h – 12h40):
Biomedical Applications and Ti-based Alloys

Chair: Claudemiro Bolfarini / UFSCAR

11h00: Invited talk - Rubens Caram, Universidade Estadual de Campinas, Brazil
“Heat treatment of metastable β -Ti alloy applied to produce implants with adjustable stiffness”

11h20: Invited talk - Carlos Roberto Grandini, Universidade Estadual Paulista, Brazil
“Development of metastable β -type Ti alloys with low elastic modulus for biomedical application”

11h40: Regular talk - Fanny Hilario, Univ. Grenoble Alpes, CNRS and LEPMI, France
“TiO₂ nanotubes for biomedical applications: morphological, structural and electrochemical characterization”

11h55: Regular talk - Rodrigo Contieri, Universidade Estadual de Campinas, Brazil
“Decomposition and Phase Precipitation effects on Mechanical Properties near-eutectoid Ti-Cu Alloy”

12h10: Regular talk - Antonio Carlos Guastaldi, Universidade Estadual Paulista, Brazil
“Nanotoxicological issues, nanosegurance, regulatory issues and their implications: Nanoparticle Interactions with Biological Systems”

12h25: Regular talk - Daniel Andrade, Bruker do Brasil
"What is the Bruker FlatQUAD?"

12h40 – 14h00: Lunch Break

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
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TUESDAY, 21/03/2017

Session 7 (14h – 16h):
Nanostructured Ceramics

Chair: Rodolfo Foster Klein Gunnewiek / UNIFAL

14h00: Plenary talk - Rodrigo Moreno, Institute of Ceramics and Glass, Spain
“Colloidal synthesis and processing of nanostructured titania coatings”

**14h30: Invited talk - Eliana N. S. Muccillo, Centro de Ciência e Tecnologia de
Materiais - IPEN, Brazil**
“Sintering Kinetics of Nanostructured Gadolinia-Doped Ceria”

**14h50: Invited talk - Jorge Roberto Vargas Garcia, Instituto Politécnico Nacional,
Mexico**
“Enhanced Catalytic Activity Induced by Ceria Nanotubes for Electro-oxidation of
Methanol”

15h10: Invited talk - José Antônio Eiras, Universidade Federal de São Carlos, Brazil
“Manipulating intrinsic properties of ferroelectric domain walls”

**15h30: Regular talk - Ruth H. G. A Kiminami, Universidade Federal de São Carlos,
Brazil**
“Microwave and spark plasma sintering of nanostructured PMN-PT/Fe₂CoO₄”

15h45: Regular talk - Marina Sparvoli, Universidade Federal do ABC, Brazil
“Synthesis and deposition of graphene oxide films for solar applications”

16h - 16h30: Coffee-Break

16h30 - 18h: Poster Session II

19h30 - 22h: Conference Dinner

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
METASTABLE AND NANOSTRUCTURED MATERIALS



WEDNESDAY, 22/03/2017

Session 8 (8h30 – 10h30):
Metastable Al-Alloys and Hydrogen Embrittlement

Chair: Conrado Ramos Moreira Afonso / UFSCAR

8h30: Invited talk - Walter José Botta, Universidade Federal de São Carlos, Brazil
“Phase selection in several Al-based QC systems”

8h50: Invited talk - Fernando Audebert, University of Buenos Aires, Argentine
“Metal-Metal Matrix Composites”

9h10: Invited talk - José Federico Chávez Alcalá, Instituto Politécnico Nacional, Mexico
"Synthesis and evaluation of hybrid SiO₂ coatings for high temperature corrosion protection"

9h30: Invited talk - Claudemiro Bolfarini, Universidade Federal de São Carlos, Brazil
“New Insights in the Formation of the Microstructure in Spray Forming of Aluminium Alloys: From Droplets to Dense Deposits”

9h50: Invited talk - Ricardo Nogueira, The Petroleum Institute – Gas Research Center, Abu Dhabi
“Sulfide stress corrosion study of a super martensitic stainless steel in H₂S sour environments: Metallic sulfides formation and hydrogen embrittlement”

10h10: Invited talk - Dilson S. Santos, Universidade Federal do Rio de Janeiro, Brazil
“Hydrogen solubility and diffusivity in amorphous, nanocrystalline compounds and defective crystalline alloys”

10h30min – 11h: Coffee-Break

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
METASTABLE AND NANOSTRUCTURED MATERIALS



WEDNESDAY, 22/03/2017

Session 9 (11h – 12h40):
Hydrogen Storage

Chair: Ricardo Floriano / UNICAMP

11h00: Invited talk - Kaveh Edalati, Kyushu University, Japan

“Design of New Metastable Hydrogen Storage Materials by Binding-Energy Engineering”

11h20: Invited talk - Jacques Huot, Université du Québec à Trois-Rivières, Canada

“Improvement of first hydrogenation of TiFe alloy by adding ZrMn₂”

11h40: Invited talk - Gabriel Meyer, Centro Atómico Bariloche e Instituto Balseiro, Argentine

“Using hydride forming materials for hydrogen compression, capture and/or purification”

12h00: Invited talk - Daniel Rodrigo Leiva, Universidade Federal de São Carlos, Brazil

“Bibliometric Studies on Hydrogen Storage Materials”

12h20: Invited talk - Stefano Deledda, Institute for Energy Technology, Norway

“Quaternary Mg-based Transition-Metal Complex Hydrides produced by reactive milling”

12h40 – 14h: Lunch Break

NANOMAT2017

THE 7TH LATIN AMERICAN CONFERENCE ON
METASTABLE AND NANOSTRUCTURED MATERIALS



WEDNESDAY, 22/03/2017

Session 10 (14h – 17h):
Metastable and Nanostructured Materials: Characterization,
Processing and Applications

Chair: Guilherme Zepon / UFSCAR

14h00: Invited talk - Gavin Vaughan, ESRF Grenoble, France

“Diffraction-Based Characterization of Local Structure In Three Dimensions Under Operand Conditions And In Real Time”

14h20: Invited talk - Santiago José Alejandro Figueroa, Brazilian Synchrotron Light Laboratory, Brazil

“Materials characterization using Synchrotron Techniques: Current Capabilities and Future Possibilities”

14h40: Invited talk - Alexander Hiroshi Kasama, CENPES - PETROBRAS, Brazil

“Potential of Nanostructured Materials in Oil and Gas Industry”

15h00: Invited Talk - Alberto Moreira Jorge Junior, Universidade Federal de São Carlos, Brazil

“Nanoporous Cobalt Applied as Catalyst in Ammonia Borane Fuel Cells”

15h20: Invited talk - André Luiz V. Costa e Silva, Universidade Federal Fluminense, Brazil

“Stability and metastability in computational thermodynamics – Challenges and opportunities in the development of novel metallic alloys”

15h40: Regular talk - Neville Clark, Centro de Investigación en Ciencia e Ingeniería de Materiales and Escuela de Física Universidad de Costa Rica, Costa Rica

“Room Temperature Formation of a Low Resistivity Layer at the Interface of Titanium Thin film on Glass Substrates”

15h55: Regular talk - Milton S.F. Lima, Institute for Advanced Studies, Brazil

“Surface modification of Ti6Al4V alloy by pulsed lasers: microstructure and hydrophobic behavior”

16h10: Regular talk - Mariana Coutinho Brum, Universidade Federal do Rio de Janeiro, Brazil

"Hydrogen Uptake Enhancement By The Use Of A Magnesium Hydride And Carbon Nanotubes Mixture"

16h25: Closing Ceremony

16h35: Concluding Remarks – Nanomat 2017