

Oral Sessions

ICFPM19

Monday 27th May

Plenary talk - Lecture Hall (Sala Anfiteatro)

Chair: J.M. Barandiarán

9:30–10:15

Tuning Magnetic Anisotropy in Nanostructures for Biomedical and Electromagnetic Applications

H. Srikanth

Physics Department, University of South Florida, Tampa (USA)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: H. Srikanth

10:15–10:45

Physical Structure and Magnetic Properties of Magnetic Nanocomposites

C.L. Dennis¹, J.A. Borchers¹, A.J. Jackson¹, J.W. Shih², A. Cresce², R.M. Briber², L.E. Woodard³, A. Attaluri³, E. Velarde³, C. Dawidczyk³, P.C. Searson³, M.G. Pomper³, R. Ivkov³, C. Grüttner⁴, J. Cappello⁵

¹National Institute of Standards and Technology, Gaithersburg, MD (USA)

²University of Maryland, College Park, MD (USA)

³The Johns Hopkins University, Baltimore, MD (USA)

⁴Micromod Partikeltechnologie, GmbH, Rostock-Warnemünde (Germany)

⁵Protein-Polymer Technologies, Inc., San Diego, CA (USA)

Session Experimental Techniques - Lecture Hall (Sala Anfiteatro)

Chair: D. Peddis

11:15–11:30

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

¹Instituto Regional de Investigación Científica Aplicada (IRICA) & Departamento de Física Aplicada, Universidad de Castilla-La Mancha, Ciudad Real (Spain)

²Department of Engineering Sciences, Uppsala University (Sweden)

³Institute of Bioengineering and Nanotechnology (Singapore)

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

11:30–11:45

Imaging Néel Skyrmions in permalloy nanodots induced by a magnetic field

E. Berganza¹, **M. Jaafar**^{1,2}, M. Goiriena-Goikoetxea^{3,4}, J. Pablo-Navarro⁵, J.A. Fernández-Roldán¹, A. García-Arribas^{5,6}, K. Gusliyenkov^{7,8}, C. Magén^{5,9,10}, J.M. de Teresa^{5,9,10}, O. Chubykalo-Fesenko¹, A. Asenjo¹

¹Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid (Spain)

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³University of California, Berkeley, California (USA)

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⁵LMA-INA, Universidad de Zaragoza (Spain)

⁶BCMaterials, Parque Tecnológico de Bizkaia, Derio (Spain)

⁷University of the Basque Country (UPV/EHU), Donostia (Spain)

⁸IKERBASQUE, The Basque Foundation for Science, Bilbao (Spain)

⁹ICMA-CSIC, Universidad de Zaragoza (Spain)

¹⁰Universidad de Zaragoza (Spain)

11:45–12:00

RIXS-MCD applied to study magnetism and structure of SPION in solutions

J. Kuciakowski¹, A. Kmita¹, J. Żukrowski¹, M. Gajewska¹, S. Lafuerza², K. Pitala¹, D. Koziej³, M. Sikora¹

¹AGH University of Science and Technology (Poland)

²European Synchrotron Radiation Facility (France)

³University of Hamburg (Germany)

12:00–12:15

Broad-band magneto-optical measurement of AC magnetic susceptibility, towards the characterisation of magnetic nanoparticles at the microscale.

R. Soucaille¹, M.E. Sharifabad², N.D. Telling², R.J. Hicken¹

¹Department of Physics and Astronomy, University of Exeter (United Kingdom)

²Institute for Science and Technology in Medicine (ISTM), Keele University (United Kingdom)

12:15–12:30

Superparamagnetism, the Curie-Weiss Law, and Demagnetizing Factors

R.B. Goldfarb

National Institute of Standards and Technology, Boulder, Colorado (USA)

12:30–12:45

Directing the Orientational Alignment of Anisometric Magnetic Nanoparticles using Dynamic Magnetic Fields

D. Zákutná^{1,2}, P. Bender³, D. Honecker², **S. Disch**¹

¹Department für Chemie, Universität zu Köln (Germany)

²Institut Laue-Langevin, Grenoble (France)

³University of Luxembourg (Luxembourg)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: H. Srikanth

12:45–13:15

New, low rare earth, high coercivity nanostructured magnets

J.M. Barandiarán^{1,2}, A.M. Schönhöbel², R. Madugundo², D. Salazar², A. Martín-Cid², A. Aubert², G.C. Hadjipanayis³

¹University of the Basque Country (UPV/EHU), Bilbao (Spain)

²Basque Center for Materials, Applications and Nanostructures (BCMaterials), Bilbao (Spain)

³University of Delaware, Newark, DE (USA)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: Ò. Iglesias

14:45–15:15

Exploring Magnetic Disorder at the Nanoscale

D. Peddis^{1,2}, N. Yaacoub³, R. Mathieu⁴, K.N. Trohidou⁵, D. Fiorani¹

¹Istituto di Struttura della Materia-CNR, Monterotondo Scalo (Roma) (Italy)

²DCCI, Università di Genova (Italy)

³IMMM, UMR CNRS 6283, Le Mans Université (France)

⁴Department of Engineering Sciences, Uppsala University (Sweden)

⁵Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", Attiki (Greece)

Session Synthesis & Functionalization - Lecture Hall (Sala Anfiteatro)

Chair: A. Lak

15:15–15:30

Monitoring in real time the aqueous co-precipitation synthesis of Fe-oxide nanoparticles with an automatized and desktop AC-susceptometer

M.P. Fernández-García^{1,2}, J.M. Teixeira[†] (*in memoriam*)

Department of Physics, Faculty of Sciences, University of Oviedo (Spain)

Work developed at: Institute Physics for Advanced Materials, Nanotechnology and Photonics, University of Porto (Portugal)

15:30–15:45

Synthesis of superparamagnetic zinc- and gallium-substituted cobalt ferrite nanoparticles

S. Jovanović^{1,2}, M. Vukomanović¹, L. Udovč¹, D. Peddis^{3,4}, M. Spreitzer¹

¹Advanced Materials Department, Jožef Stefan Institute, Ljubljana (Slovenia)

²Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade (Serbia)

³nM2-Lab, Istituto di Struttura della Materia, CNR, Monterotondo Scalo, RM (Italy)

⁴Department of Chemistry and Industrial Chemistry, University of Genova (Italy)

15:45–16:00

Synthesis and magnetic properties of Fe@C core-shell nanostructures

L. Cervera¹, C. Gómez-Polo¹, J.I. Pérez-Landazábal¹, M. Monteserín², S. Larumbe², F. Martín²

¹Departamento de Ciencias & Institute for Advanced Materials (INAMAT), Universidad Pública de Navarra, Pamplona (Spain)

²Surface Engineering, Asociación de la Industria Navarra, Cordovilla, Navarra (Spain)

16:00–16:15

Magnetic hyperthermia evaluation and MRI relaxivity of highly stable core shell silica- Cobalt Zinc Ferrite nanoparticles

A. Ahmad¹, H. Bae², I. Rhee²

¹Department of Physics, Women University Swabi (Pakistan)

²Department of Physics, Kyungpook National University, Daegu (Korea)

16:15–16:30 in

Controlling the synthesis and the heating power of iron carbide nanoparticles in solution hyperthermia

J.M. Asensio, J. Marbaix, N. Mille, L.-M. Lacroix, P.-F. Fazzini, K. Soulantika, J. Carrey, B. Chaudret

LPCNO, Université de Toulouse, CNRS, INSA, UPS, Toulouse (France)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: Ò. Iglesias

16:30–17:00

Magnetic Small-Angle Neutron Scattering as a Tool to Investigate Nanoscale Spin Inhomogeneity

A. Michels

University of Luxembourg (Luxembourg)

Tuesday 28th May

Plenary talk - Lecture Hall (Sala Anfiteatro)

Chair: M.P. Morales

9:00–9:45

Magnetoresistance as a Probe of Switching, Superparamagnetism and Exchange Bias in Individual Nanoparticles

S.A. Majetich

Physics Department, Carnegie Mellon University, Pittsburgh, PA (USA)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: E. Winkler

9:45–10:15

From nanostructure to individual characterization of iron oxide based nanoparticles

A. Fraile Rodríguez^{1,2}, C. Moya³, M. Escoda Torroella^{1,2}, M. García del Muro^{1,2}, X. Batlle^{1,2}, **A. Labarta**^{1,2}

¹Dpt. Física de la Matèria Condensada, Universitat de Barcelona (Spain)

²Institut de Nanociència i Nanotecnologia, Universitat de Barcelona (Spain)

³Instituto de Ciencia de Materiales de Barcelona (ICMAB, CSIC), Bellaterra (Spain)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: E. Winkler

10:15–10:45

Towards the Quantitative Mapping of 3D Spin Textures in Nanoscopic Objects

S. Schneider^{1,2}, D. Wolf³, A. Lubk³, **D. Pohl**^{1,4}, M.J. Stolt⁵, S. Jin⁵, J. Ruzs⁶, B. Rellinghaus^{1,4}

¹Institute for Metallic Materials, IFW Dresden (Germany)

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³Institute for Solid State Research, IFW Dresden (Germany)

⁴Dresden Center for Nanoanalysis, Technische Universität Dresden (Germany)

⁵Department of Chemistry, University of Wisconsin-Madison (USA)

⁶Department of Physics and Astronomy, Uppsala University (Sweden)

Session Life Sciences Applications - Lecture Hall (Sala Anfiteatro) (Parallel Session¹)

Chairs: P. Marín & G. Vallejo-Fernandez

11:15–11:30

Electrodecoration of iron oxide nanoparticles with bioactive nanophases for targeted antimicrobial materials

N. Ditaranto¹, M. Salvador^{2,3}, L. Sarcina¹, A. Moyano⁴, M. Rivas², M.C. Blanco-López⁴, **N. Cioffi**¹

¹Dipartimento di Chimica, Università degli Studi di Bari "Aldo Moro", Bari, Italy

²Department of Physics & IUTA, University of Oviedo, Gijón (Spain)

³Istituto di Struttura della Materia-CNR, Monterotondo Scalo (Roma) (Italy)

⁴Department of Physical and Analytical Chemistry, University of Oviedo, Oviedo (Spain)

11:30–11:45

Mechanical destruction of cancer cells using magnetic nanoparticles submitted to a low frequency rotating field: simulations and in situ observation

A. Hillion¹, N. Hallali¹, S. Lopez^{1,2}, P. Clerc^{1,2}, D. Fourmy^{1,2}, V. Gigoux^{1,2}, J. Carrey¹

¹LPCNO, UMR5215 INSA-CNRS-UPS, Toulouse (France)

²INSERM ERL1226, Receptology and Targeted Therapy of Cancers, Toulouse (France)

11:45–12:00

Magnetotactic Bacteria in marine environments: searching for nanobiominerals

B. Lesniak, A.U. Gehring

Institute of Geophysics, Department of Earth Sciences, ETH Zurich (Switzerland)

12:00–12:15

Decontamination of Wastewater and Leachates by Magnetic Particles.

P.A. Augusto¹, T. Castelo-Grande², J. Rico¹, R. Iglesias¹, J. Marcos¹, L. Merchán¹, L. Hernández¹, D. Barbosa², A.M. Estevez¹

¹APLICAMA Research Group, Facultad de Ciencias Químicas, Universidad de Salamanca (Spain)

²LEPABE, Departamento de Engenharia Química, Faculdade de Engenharia da Universidade do Porto (Portugal)

12:15–12:30

Magnetic microparticles form industrial pollution sources in soils

J.M. Michalik¹, Cz. Kapusta¹, W. Wilczyńska-Michalik², M. Michalik³

¹Faculty of Physics and Applied Computer Science, AGH-University of Science and Technology (Poland)

²Institute of Geography, Pedagogical University of Cracow (Poland)

³Institute of Geological Sciences, Jagiellonian University (Poland)

¹Go to page 6 to see the scheduled simultaneous talks

12:30–12:45

Improving the Heating Efficiency of Iron Oxide Nanoparticles by Tuning Their Shape and Size

Z. Nemati^{1,4}, J. Alonso^{2,3}, I. Rodrigo³, R. Das⁴, E. Garaio^{5,6}, J.A. García^{3,7}, I. Orue⁸, M.-H. Phan⁴, H. Srikanth⁴

¹Department of Electrical and Computer Engineering, University of Minnesota (USA)

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⁶Departamento de Física, Universidad Pública de Navarra, Pamplona (Spain)

⁷Dpto. de Física Aplicada II, Universidad del País Vasco (UPV/EHU), Leioa (Spain)

12:45–13:00

Interlaboratory assessment on the determination of the specific loss power from magnetic nanoparticles for magnetic hyperthermia

D. Ortega^{1,2}, J. Wells³, U. Steinhoff³, S. Dutz⁴, E. Garaio⁵, O. Sandre^{6,7}, E. Natividad⁸, M. Cruz⁹, P. Southern^{10,11}, S. Spirou¹², Q.A. Pankhurst^{10,11}, S. Spassov¹³

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²Nanobiotecnología (iMdea Nanociencia) Unidad Asociada al Centro Nacional de Biotecnología (CSIC) Madrid (Spain)

³Physikalisch-Technische Bundesanstalt, Berlin (Germany)

⁴Technische Universität Ilmenau, Institut für Biomedizinische Technik und Informatik, Ilmenau (Germany)

⁵Nafarroako Unibertsitate Publikoan, Pamplona (Spain)

⁶Université de Bordeaux, Pessac (France)

⁷CNRS, Laboratoire de Chimie des Polymères Organiques, Pessac (France)

⁸Instituto de Ciencia de Materiales de Aragón (ICMA), CSIC-Universidad de Zaragoza (Spain)

⁹Universidade de Lisboa (Portugal)

¹⁰Resonant Circuits Limited, London (UK)

¹¹Healthcare Biomagnetics Laboratory, University College London (UK)

¹²Sismanoglio General Hospital of Attica, Athens (Greece)

¹³Institut Royal Météorologique, Dourbes (Belgium)

13:00–13:15

Surface spectroscopic characterization of iron oxide nanoparticles

N. Ditaranto¹, M. Salvador^{2,3}, L. Sarcina¹, A. Moyano^{2,4}, M. Rivas², M.C. Blanco-López⁴, N. Cioffi¹

¹Dipartimento di Chimica, Università degli Studi di Bari "Aldo Moro", Bari (Italy)

²Department of Physics & IUTA, University of Oviedo, Gijón (Spain)

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

⁴Department of Physical and Analytical Chemistry, University of Oviedo (Spain)

Session Experimental Techniques - Column Room (Sala de Columnas)
(Parallel session²)

Chairs: C. de Julián Fernández & J.A. De Toro

11:15–11:30

3D magnetometry in nanomaterials using XMCD-PEEM microscopy

S. Ruiz-Gomez¹, A. Quesada², M. Foerster³, L. Aballe³, A. Mascaraque¹, J. de la Figuera⁴, L. Perez^{1,5}

¹Dpto. de Física de Materiales, Universidad Complutense de Madrid (Spain)

²Instituto de Cerámica y Vidrio, CSIC, Madrid (Spain)

³Alba Synchrotron Light Facility, CELLS, Barcelona (Spain)

⁴Instituto de Química Física "Rocasolano", CSIC, Madrid (Spain)

⁵IMDEA Nanociencia, Cantoblanco, Madrid (Spain)

11:30–11:45

Zoom, a polarised small angle neutron scattering diffractometer at ISIS target station II

D. Alba Venero, J. Douth

Isis neutron and muon source, Rutherford Appleton Laboratory (UK)

²Go to page 5 to see the scheduled simultaneous talks

11:45–12:00

Internal temperature measurements by X-Ray diffraction of magnetic nanoparticles excited by a high-frequency magnetic field.

S. Faure¹, N. Mille¹, S. Kale¹, J.-M. Asensio¹, J. Marbaix¹, P. Farger¹, D. Stoian², W. Van Bee², P.-F. Fazzini¹, K. Soulantika¹, B. Chaudret¹, J. Carrey¹

¹LPCNO (UMR5215 CNRS-INSA-UPS), Toulouse (France)

²ESRF, Swiss Norwegian Beamlines, Grenoble (France)

12:00–12:15

Probing local magnetic fields of nanoparticles assembled on gold nanoantennas using concepts from magnetoplasmonics

G. Petrucci¹, O. Lysenko², E. Fantechi¹, C. Sangregorio^{3,4}, A. Dmitriev², **F. Pineider**¹

¹INSTM & Dept. of Chemistry and Industrial Chemistry, University of Pisa (Italy)

²Gothenburg University, Department of Physics, Gothenburg (Sweden)

³CNR-ICCOM, Sesto Fiorentino, FI (Italy)

⁴INSTM & Dept. of Chemistry, University of Florence (Italy)

12:15–12:30

A magneto-optical instrument for broadband AC susceptibility and magnetometry on nanoparticles

M.E. Sharifabad¹, R. Soucaille², R.J. Hicken², N.D. Telling¹

¹Institute for Science and Technology in Medicine (ISTM), Keele University (United Kingdom)

²Department of Physics and Astronomy, University of Exeter (United Kingdom)

12:30–12:45

Temperature dependence of magnetic nanoparticles heating power measured up to high temperature

N. Mille¹, M. Estrader¹, D. Yi¹, J.M. Asensio¹, D. de Masi¹, J. Marbaix¹, S. Faure¹, K. Soulantika¹, A. Milan², B. Chaudret¹, J. Carrey¹

¹LPCNO, Toulouse CEDEX 4 (France)

²Facultad de Ciencias, Universidad de Zaragoza (Spain)

12:45–13:00

Size-induced negative thermal expansion in $Gd_5(Si,Ge)_4$ multifunctional material

J.H. Belo¹, A.L. Pires¹, I.T. Gomes¹, V. Andrade¹, J.B. Sousa¹, R.L. Hadimani², D.C. Jiles³, Y. Ren⁴, X. Zhang⁴, J.P. Araújo¹, A.M. Pereira¹

¹IFIMUP, Departamento de Física e Astronomia da Faculdade de Ciências da Universidade do Porto (Portugal)

²Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, Virginia (USA)

³Department of Electrical and Computer Engineering, Iowa State University, Ames, IA 50011, USA.

⁴Department of Electrical and Computer Engineering, Iowa State University, Ames & Ames Laboratory, US Department of Energy, Iowa State University, Ames, IA (USA)

⁵X-ray Science Division, Argonne National Laboratory, Argonne, Illinois (USA)

13:00–13:15

Revealing moment correlations within nanoparticle clusters

P. Bender¹, D. Honecker², L. Fernández Barquín³

¹University of Luxembourg (Luxembourg)

²Institut Laue Langevin ILL, LSS, Grenoble (France)

³University of Cantabria, CITIMAC, Santander (Spain)

Session Data & Energy - Lecture Hall (Sala Anfiteatro)
(Parallel session³)

Chair: J. Alonso

14:45–15:00

Magnetic Anisotropy of Strontium Ferrite nanoparticles

C. de Julián Fernández¹, D. Mishra^{1,2}, R. Cabassi¹, F. Bolzoni¹, M. Petrecca^{3,4}, M. Albino^{3,4}, M. Saura-Múzquiz⁵, P. Jenus⁶, A. Quesada⁷, M. Christensen⁵, T. Schliesch⁸, B. Belec¹, C. Sangregorio³, F. Albertini¹

¹IMEM - CNR, Parma (Italy)

²Department of Physics, Indian Institute of Technology Jodhpur, Rajasthan (India)

³ICCOM - CNR and INSTM, Sesto F.no (Italy)

⁴INSTM and Dept. of Chemistry "U. Schiff", Univ. of Florence, Sesto. Fno (Italy)

⁵Dept. Chemistry - iNANO, Aarhus University (Denmark)

⁶Dept. Nanostructured Materials, Jožef Stefan Institute, Ljubljana (Slovenia)

⁷Instituto de Cerámica y Vidrio - CSIC, Madrid (Spain)

⁸Max Baermann GmbH, Bergisch Gladbach (Germany)

15:00–15:15

Structural, microstructural and magnetic study of Nd-Fe-B magnets during a sub-and supercritical recycling process

M. Kchaw¹, V. Nachbaur¹, N. Maât³, F. Ayadi¹, J.M. Le Breton¹, S. Jouen¹, C. Aymonier²

¹GPM, Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Rouen (France)

²CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB, UMR5026, Pessac (France)

³Department of Chemical Engineering, Northeastern University, Boston, MA (USA)

15:15–15:30

Ionic liquid based ferrofluid for low-grade thermal energy harvesting

K. Bhattacharya¹, J. Reidl², M. Sarkar², V. Peyre², E. Dubois², M. Bonetti¹, M. Roger¹, R. Perzynski², S. Nakamae¹

¹SPEC, CEA, CNRS, Université Paris-Saclay (France)

²Sorbonne Université, CNRS, Laboratoire Physicochimie des Electrolytes et Nanosystèmes interfaciaux (PHENIX), Paris (France)

15:30–15:45

Magnetically Coupled Core-Shell Nanoparticles: Towards Thermometry on the Nanoscale

A.J. Biacchi, G. Cheng, A. Farrar, N. Terranova, S.I. Woods, M.J. Donahue, T.P. Moffat, W.L. Tew, C.L. Dennis, A.R. Hight Walker

National Institute of Standards and Technology, Gaithersburg, MD (USA)

15:45–16:00

Magnetocaloric effect in nanostructured alloys for magnetic refrigeration applications

C. Echevarria-Bonet^{1,2}, M. Reguero¹, J.A. Blanco¹, D.P. Rojas³, L. Fernández Barquín²

¹Dpto de Física, Universidad de Oviedo (Spain)

²Departamento CITIMAC, Faculty of Science, University of Cantabria (Spain)

³Dpto de Estructuras y Física de la Edificación. Universidad Politécnica de Madrid (Spain)

³Go to page 9 to see the scheduled simultaneous talks

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: Q.A. Pankhurst

16:00–16:30

Blocking, remanence and exchange coupling properties of weakly and highly interactive cobalt ferrite based nanoparticles

C.A.M. Vieira¹, R.C. Leite¹, R. Cabreira Gomes^{1,2}, F.G. Silva^{1,2}, R. Aquino², A.F.C. Campos², R. Perzynski³, **J. Depuyrot**¹

¹Instituto de Física, Universidade de Brasília (Brazil)

²Faculdade UnB Planaltina, Universidade de Brasília (Brazil)

³Sorbonne Université, PHENIX CNRS UMR 8234, F-75005, Paris (France)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: Q.A. Pankhurst

16:30–17:00

Functionalized Magnetic Nanoparticles to Tackle Cancer

T. Pellegrino

Istituto Italiano di Tecnologia, Genoa (Italy)

Session Experimental Techniques - Column Room (Sala de Columnas) (Parallel session⁴)

Chair: L. Fernández Barquín

14:45–15:00

Magnetic phase diagrams and hysteretic properties of ferromagnetic nanotubes: A Monte Carlo and micromagnetic study

J. Restrepo¹, H.D. Salinas¹, Ò. Iglesias²

¹Grupo de Magnetismo y Simulación G+, Instituto de Física, Universidad de Antioquia, Medellín (Colombia)

²Departament de Física de la Matèria Condensada & Institut de Nanociència i Nanotecnologia (IN²UB), Universitat de Barcelona (Spain)

15:00–15:15

Empirical model describing magnetic properties governed by interactions in ordered assemblies of magnetic nanoparticles

I. Andreu¹, A. Urtizberea², **E. Natividad**¹

¹Instituto de Ciencia de Materiales de Aragón (ICMA), CSIC-Universidad de Zaragoza EINA, Zaragoza (Spain)

²Centro Universitario de la Defensa, Zaragoza (Spain)

15:15–15:30

Magnetization Dynamics in Chains of long-ranged coupled Magnetic Nanoparticles

F. Vernay, H. Kachkachi

Laboratoire PROMES CNRS (UPR-8521) & Université de Perpignan Via Domitia, Perpignan (France)

15:30–15:45

Effects of shape and spatial arrangement of nanoparticle assemblies on their hyperthermia performance

Ò. Iglesias, X. Martín-Rey

Matèria Condensada & IN²UB, Facultat de Física, Universitat de Barcelona (Spain)

15:45–16:00

Defects-driven magnetic behaviour of iron-oxide based nanoparticles

M. Vasilakaki¹, G. Antonaropoulos^{2,3}, K. Brintakis², A. Kostopoulou², A. Lappas², K. Trohidou¹

¹Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", Athens (Greece)

²Institute of Electronic Structure and Laser, Foundation for Research and Technology - Hellas, Vassilika Vouton, Heraklion (Greece)

³Department of Chemistry, University of Crete, Voutes, Heraklion (Greece)

⁴Go to page 8 to see the scheduled simultaneous talks

Plenary talk - Lecture Hall (Sala Anfiteatro)

Chair: M. Rivas

9:00–9:45

Mesoporous silica nanoparticles as drug carriers against bone diseases

M. Vallet-Regí

Department of Chemistry in Pharmaceutical Sciences, Universidad Complutense de Madrid & Instituto de Investigación Sanitaria, Hospital 12 de Octubre i+12, Madrid & Networking Research Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Madrid (Spain)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: R. Perzynski

9:45–10:15

Spintronic devices based on 2D van der Waals heterostructures

L.E. Hueso^{1,2}, W. Yan¹, C.K. Saefer¹, E. Sagasta¹, O. Txoperena¹, J. Ingla¹, M. Ribeiro¹, F. Herling¹, F. Casanova^{1,2}

¹CIC nanoGUNE, San Sebastian (Spain)

²IKERBASQUE, Basque Foundation for Science (Spain)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: R. Perzynski

10:15–10:45

Control of magneto-static and -dynamic properties by stress tuning in Fe-Si-B amorphous microwires

I. Baraban¹, L. Panina^{1,2}, M. Vereshchagin¹, S. Leble¹, **V. Rodionova**^{1,2}

¹Immanuel Kant Baltic Federal University, Kaliningrad (Russia)

²National University of Science and Technology, MISiS, Moscow (Russia)

Session Fundamental properties - Lecture Hall (Sala Anfiteatro) (Parallel session)⁵

Chairs: C. Marquina & H. Kachkachi

11:15–11:30

Probing antiferromagnetic ordering in individual CoO/Co₃O₄ core shell nanoparticles

D. Bracher¹, T.M. Savchenko¹, M. Testa Anta², M. Wyss³, F. Nolting¹, V. Salgueiriño², M. Poggio³, A. Kleibert¹

¹Swiss Light Source, Paul Scherrer Institut, Villigen (Switzerland)

²Departamento de Física Aplicada, Universidade de Vigo (Spain)

³Department of Physics and Astronomy, University of Basel (Switzerland)

⁵Go to page 12 to see the scheduled talks

11:30–11:45

Influence of particle anisotropy on the collective freezing temperature of dense assemblies of oxide particles

E.H. Sánchez¹, P.S. Normile¹, M.S. Andersson^{2,4}, R. Mathieu², P. Nordblad², D. Peddis³, J.A. De Toro¹

¹Instituto Regional de Investigación Científica Aplicada (IRICA) & Departamento de Física Aplicada, Universidad de Castilla-La Mancha, Ciudad Real (Spain)

²Department of Engineering Sciences, Uppsala University (Sweden)

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⁴Department of Chemistry and Chemical Engineering, Chalmers University of Technology, Göteborg (Sweden)

11:45–12:00

Preparation and investigation of magnetic-plasmonic heterostructured nanocrystals with different morphology and composition

E. Fantechi¹, A. Gabbani¹, G. Petrucci¹, C. Innocenti^{2,3}, C. Sangregorio^{2,3}, G. Bertoni⁴, A.G. Roca⁵, J. Nogués^{5,6}, F. Pineider¹

¹INSTM & Dept. of Chemistry and Industrial Chemistry, University of Pisa (Italy)

²CNR-ICCOM, Sesto Fiorentino, FI (Italy)

³INSTM & Dept. of Chemistry, University of Florence (Italy)

⁴CNR-IMEM, Parma (Italy)

⁵Catalan Institute of Nanoscience and Nanotechnology (ICN2), Bellaterra (Spain)

⁶ICREA, Barcelona (Spain)

12:00–12:15

Investigation of finite size effects in self-assembly of magnetic nanoparticles

N. Nandakumaran¹, M. Feygenson¹, L. Barnsley², A. Feoktystov², T. Brückel¹

¹Forschungszentrum Jülich GmbH, Jülich Centre for Neutron Science, Jülich (Germany)

²Forschungszentrum Jülich GmbH, Jülich Centre for Neutron Science JCNS at Heinz, Garching (Germany)

12:15–12:30

Investigation magnetic properties $Hg_{0.865}Mn_{0.135}Te$

A. Shestakov¹, I. Gilmutdinov², I. Fazlizhanov^{1,2}, M. Ibragimova^{1,2}, R. Eremina^{1,2}

¹Zavoisky Physical-Technical Institute, FRC Kazan Scientific Center of RAS, Kazan (Russia)

²Kazan Federal University, Institute of Physics, Kazan (Russia)

12:30–12:45

Spatially Resolved Surface Anisotropy in Ferrite Nanoparticles

D. Zákutná^{1,2}, D. Honecker², S. Disch¹

¹Universität zu Köln, Köln (Germany)

²Institut Laue-Langevin, Grenoble (France)

12:45–13:00

Plasmon Induced Magneto-Optical Enhancement in Metallic Ag/FeCo Core/Shell Nanoparticles Synthesized by Colloidal Chemistry

A. López-Ortega¹, S. Maenosono², P. Vavassori^{3,4}

¹Instituto de Nanociencia, Nanotecnología y Materiales Moleculares & Universidad de Castilla-La Mancha, Toledo (Spain)

²School of Materials Science, Japan Advanced Institute of Science and Technology, Nomi (Japan)

³CIC nanoGUNE, Donostia - San Sebastian (Spain)

⁴IKERBASQUE, The Basque Foundation for Science, Bilbao (Spain)

13:00–13:15

Effect of ultra-short laser pulse excitation probed in individual ferromagnetic nanoparticles

T.M. Savchenko, M. Buzzi, J. Vijayakumar, M. Timm, L. Howald, D. Bracher, C.A.F. Vaz, F. Nolting, A. Kleibert

Swiss Light Source, Paul Scherrer Institut, Villigen (Switzerland)

Session Life Sciences Applications - Column Room (Sala de Columnas) (Parallel session)⁶

Chairs: D. Ortega & C.L. Dennis

11:15-11:30

Magnetite-gold nanoparticles: from physics to theranostics

M.V. Efremova^{1,2}, Y.A. Nalench², E. Myrovali³, A.S. Garanina^{1,2}, V.A. Naumenko², M.A. Abakumov^{2,4}, M. Spasova⁵, M. Angelakeris³, A.G. Savchenko², M. Farle⁵, A.G. Majouga^{1,2,6}, N.L. Klyachko^{1,2}, **U. Wiedwald**^{2,5}
newline¹Lomonosov Moscow State University, Department of Chemistry, Moscow (Russia)

²National University of Science and Technology "MISIS", Moscow (Russia)

³Aristotle University of Thessaloniki, Physics Department, Thessaloniki (Greece)

⁴Department of Medical Nanobiotechnology, Russian National Research Medical University, Moscow (Russia)

⁵Faculty of Physics and Center for Nanointegration Duisburg-Essen, University of Duisburg-Essen, Duisburg (Germany)

⁶D. Mendeleev University of Chemical Technology of Russia, Moscow (Russia)

11:30-11:45

Magnetoliposomes as nanocarrier for Doxorubicin delivery

M.E.F. Brollo¹, A. Tabero², A.D. Bajo¹, G. Prieto³, A. Villanueva², M.C. Serrano¹, M.P. Morales¹

¹Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Spain

²Departamento de Biología, Universidad Autónoma de Madrid, Spain

³Departamento de Física Aplicada, Universidad de Santiago de Compostela, Spain

11:45-12:00

Superparamagnetic nanostructured agents with tailored hybrid composition for environmental mitigation

Y. Piñeiro¹, L. de Castro Alves¹, S. Yañez Vilar¹, M. Gonzalez Gomez¹, J.M. González-Jartín², I. Rodríguez², A. Alfonso², M.J. Sainz³, L. Botana², J. Rivas¹

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²Departamento de Farmacología, Universidad de Santiago de Compostela, Lugo (Spain)

³Departamento de Producción Vegetal, Universidad de Santiago de Compostela, Lugo (Spain)

12:00-12:15

Choosing Optimal Excitation Sequences for Magnetorelaxometry Imaging by means of Condition Number Minimization

P. Schier¹, M. Liebl², U. Steinhoff², F. Wiekhorst², D. Baumgarten¹

¹Institute of Electrical and Biomedical Engineering, Private University for Health Sciences, Medical Informatics and Technology (UMIT), Hall in Tirol (Austria)

²Physikalisch-Technische Bundesanstalt (PTB), Berlin (Germany)

12:15-12:30

Magnetic nanoparticles as smart theranostic monitors

A. Coene¹, **J. Leliaert**², M. Liebl³, D. Baumgarten⁴, U. Steinhoff³, F. Wiekhorst³, L. Dupré¹

¹Department of Electrical Energy, Systems and Automation, Ghent University, Zwijnaarde (Belgium)

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⁴Institute of Electrical and Biomedical Engineering, UMIT, Hall in Tirol (Austria)

⁶Go to page 10 to see the scheduled simultaneous talks

12:30–12:45

Insights into the magnetosome chain configuration

I. Orue¹, **L. Marciano**^{2,3}, P. Bender⁴, A. García Prieto^{5,6}, S. Valencia³, M.A. Mawass³, D. Gil-Cartón⁷, D. Alba Venero⁸, D. Honecker⁹, A. García-Arribas^{2,6}, L. Fernández Barquín¹⁰, A. Muela^{6,11}, M. Fdez-Gubieda^{2,6}

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⁹Institut Laue-Langevin, Grenoble (France)

¹⁰CITIMAC, Universidad de Cantabria, Santander (Spain)

¹¹Dpto. Inmunología, Microbiología y Parasitología, Universidad del País Vasco - UPV/EHU, Leioa (Spain)

12:45–13:00

Magnetic heating mechanism in Mn-doped magnetite nanoparticles

L. Del Bianco¹, F. Spizzo¹, G. Barucca², M. Ruggiero³, S. Geninatti Crich³, M. Forzan⁴, E. Sieni⁴, P. Sgarbossa⁴

¹Dipartimento di Fisica e Scienze della Terra, Università di Ferrara (Italy)

²Dipartimento SIMAU, Università Politecnica delle Marche, Ancona (Italy)

³Dipartimento di Biotecnologie Molecolari e Scienze per la salute, Università di Torino (Italy)

⁴Dipartimento di Ingegneria Industriale, Università di Padova (Italy)

13:00–13:15

Luminescent β -NaY_{0.8}Ln_{0.2}F₄ nanoparticles coated by a superparamagnetic γ -Fe₂O₃ poly- and nanocrystalline shell: Toward dual magnetic resonance and optical imaging probes

M. Parvizian¹, W. Mnasri^{1,2,3,4}, B. Tahar², B. Boissière³, S. Sandre⁴, S. Ammar¹

¹Université Paris Diderot, Sorbonne Paris Cité, Laboratoire ITODYS, CNRS UMR-7086, Paris (France)

²Université de Carthage, Faculté des Sciences de Bizerte, LR18 ES11, Laboratoire CHO-MN, Zarzouna (Tunisie)

³Université de Cergy-Pontoise, Maison Internationale de la Recherche, Laboratoire ERRMECe, Neuville/Oise (France)

⁴Université de Bordeaux, Bordeaux INP, ENSCPB, Laboratoire LCPO, CNRS UMR-5629, Pessac (France)

Session Life Sciences Applications - Column Room (Sala de Columnas)
(Parallel session)⁷

Chairs: A. López-Ortega

14:45–15:00

Stress dependence of the magnetic properties of glass-coated amorphous microwires

P. Corte-Leon^{1,2}, V. Zhukova^{1,2}, M. Ipatov^{1,2}, J.M. Blanco², J. Gonzalez¹, A. Zhukov^{1,2,3}

¹Dept. Phys. Mater., Basque Country University, UPV/EHU, San Sebastian (Spain)

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³IKERBASQUE, Basque Foundation for Science, Bilbao (Spain)

15:00–15:15

Magneto-optical Activity of Cobalt Ferrite Nanoparticles confined in Silica Capsules modified by One Single Gold Nanoparticle

V. Salgueiriño

Departamento de Física Aplicada, Universidade de Vigo (Spain)

⁷Go to page 15 to see the scheduled simultaneous talk

15:15–15:30

Synthesis and characterization of FeCo high magnetization nanoparticles obtained by physical routes

V. Vadillo¹, J. Gutiérrez^{1,2}, M. Insausti^{1,3}, J.S. Garitaonandia^{1,4}, I. Quintana⁵, J.M. Barandiarán^{1,2}

¹BCMaterials (Basque Center for Materials, Applications & Nanostructures), Leioa (Spain)

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³Dpt. Química Inorgánica, Universidad del País Vasco, UPV/EHU, Leioa (Spain)

⁴Dpt. Física Aplicada II, Universidad del País Vasco, UPV/EHU, Leioa (Spain)

⁵Ik4-Tekniker, Polígono Tecnológico de Eibar (Spain)

15:30–15:45

Controlled design of exchange coupled nano-heterostructures with high energy product

B. Muzzi^{1,2}, M. Albino³, M. Petrecca², C. Innocenti², B. Cortigiani³, G. Bertoni⁴, C. de Julián Fernandez⁴, C. Sangregorio^{2,3}

¹Dept. Of Biotechnology, Chemistry and Pharmacy, Univ. of Siena (Italy)

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³INSTM & Dept. Of Chemistry "U. Schiff", Univ. of Florence, Sesto. Fno (Italy)

⁴IMEM - CNR, Parma (Italy)

15:45–16:00

Anisotropy of Assemblies of Densely Packed Co-based Nanoparticles Embedded Inside Carbon Nanotubes

S.L. Prischepa^{1,2}, A.L. Danilyuk¹, A.V. Kukharev¹, F. Le Normand^{3,4}

¹Belarussian State University of Informatics and Radioelectronics, Minsk (Belarus)

²National Research Nuclear University MEPhI, Moscow (Russia)

³Institut de Physique et Chimie des Matériaux de Strasbourg (IPCMS), CNRS-University of Strasbourg (France)

⁴ICube/MaCEPV Laboratory, CNRS-University of Strasbourg (France)

16:00–16:15

Optimization of the magnetic and the structural properties of the FeSiCuNbB particles obtained by high energy ball milling processes

J. López-Sánchez¹, E. Navarro^{1,2}, A. Serrano³, A. del Campo³, P. Marín^{1,2}

¹Instituto de Magnetismo Aplicado, UCM-CSIC-ADIF, Las Rozas (Spain)

²Departamento de Física de Materiales, Universidad Complutense de Madrid (UCM), Madrid (Spain)

³Instituto de Cerámica y Vidrio, ICV-CSIC, Madrid (Spain)

16:15–16:30

Influence of organometallic iron precursor on zero valent FeNPs properties

L. Haim¹, P. Lecante², P.-F. Fazzini², K. Phillipot¹, C. Amiens¹, M. Respaud³

¹LCC (Laboratoire de Chimie de Coordination), CNRS, UPS, Toulouse (France)

²CEMES (Centre d'Elaboration de Matériaux et d'Etudes Structurales), CNRS, Toulouse (France)

³LPCNO (Laboratoire de Physique et Chimie des Nano-Objets), UMR 5215 INSA, CNRS, UPS, Toulouse Cedex-4 (France)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: P. Gorria

16:30–17:00

Ferromagnetic resonance of biogenic magnetic nanoparticle assemblies

M. Charilaou

Department of Physics, University of Louisiana at Lafayette (USA)

Invited talk - Lecture Hall (Sala Anfiteatro)

Chair: P. Gorria

17:00–17:30

Comparison of FORC Analysis Methods for Ni Nanorods in a Hydrogel

C.L. Dennis¹, S. Lund², R. Shull¹

¹Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD (USA)

²Statistical Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD (USA)

Session Life Sciences Applications - Column Room (Sala de Columnas) (Parallel session)⁸

Chair: P. de la Presa

14:45–15:00

Relevance of Brownian relaxation as power absorption mechanism in Magnetic Hyperthermia

T.E. Torres¹, E. Lima Jr.¹, P. Calatayud², B. Sanz², A. Ibarra^{2,3}, R. Fernández-Pacheco^{2,3}, A. Mayoral⁴, C. Marquina^{5,6}, M.R. Ibarra^{2,3,5,6}, G.F. Goya^{2,3,5,6}

¹Div. Resonancias Magnéticas, Centro Atómico de Bariloche/CONICET, Bariloche (Argentina)

²Instituto de Nanociencia de Aragón (INA), Universidad de Zaragoza (Spain)

³Laboratorio de Microscopias Avanzadas (LMA), Universidad de Zaragoza (Spain)

⁴School of Physical Science and Technology, ShanghaiTech University, Pudong, Shanghai (PR China)

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⁶Instituto de Ciencia de Materiales de Aragón (ICMA), Consejo Superior de Investigaciones Científicas (CSIC) - Universidad de Zaragoza (Spain)

15:00–15:15

Optimization of Magnetic Hyperthermia via Nano-Octahedra above SuperParamagnetic Limit

I. Castellanos-Rubio¹, I. Rodrigo^{1,2}, O. Arriortua¹, J.S. Garitaonandia¹, A. Martinez-Amesti³, F. Plazaola¹, I. Orue³, L. Lezama¹, M. Insausti^{1,2}

¹Facultad de Ciencia y Tecnología, UPV/EHU, Leioa (Spain)

²Basque Center for Materials, Applications and Nanostructures, Leioa (Spain)

³SGIker, Servicios Generales de Investigación, UPV/EHU, Leioa (Spain)

15:15–15:30

Hexagonal magnetic nanodisks: versatile agents for efficient alternation between hyperthermic and magneto-mechanical modalities, and to probe the secondary role of Brownian rotation in heating

D. Serantes¹, R. Chantrell², H. Gavilán³, M. Morales³, O. Chubykalo-Fesenko³, D. Baldomir¹, A. Satoh⁴

¹Applied Physics Department and Instituto de Investigaciones Tecnológicas, Universidade de Santiago de Compostela (Spain)

²Department of Physics, University of York (UK)

³Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco, Madrid (Spain)

⁴Faculty of System Science and Technology, Akita Prefecture University, Yuri-Honjo (Japan)

15:30–15:45

PEGylation of Magnetic Nanoparticles for Theranostics

K. Fujiwara¹, T. Ide¹, A. Oshima¹, K. Kanda¹, Y. Ichyanagi^{1,2}

¹Department of Physics, Graduate School of Engineering, Yokohama National University, Yokohama, Kanagawa (Japan)

²RCST, Graduate School of Science, Osaka University, Toyonaka, Osaka (Japan)Yokohama National University

15:45–16:00

Fatty-acid stabilised superparamagnetic nanoparticles to understand the reading-out of paper-based immunoassays

M. Salvador^{1,2}, A. Moyano^{1,3}, J.C. Martínez-García¹, M.C. Blanco-López³, V. Socoliuc⁴, L. Vékas⁴, D. Peddis², M. Rivas¹

¹Department of Physics & IUTA, University of Oviedo (Spain)

²Istituto di Struttura della Materia, CNR (Italia)

³Department of Physical and Analytical Chemistry, University of Oviedo (Spain)

⁴Romanian Academy - Timisoara Branch, Center for Fundamental and Advanced Technical Research, Laboratory of Magnetic Fluids, Timisoara (Romania)

⁸Go to page 13 to see scheduled simultaneous talks

16:00–16:15

MPI/MRI magneto-stimulation thresholds for the Peripheral Nervous System

D. Grau¹, L. Angelidakis^{1,2}, E. Pallás^{1,2}, J. Algarín^{1,2}, E. Díaz³, F. Galve^{1,2}, J. Rigla³, M. Corberán^{1,2}, J. González³, A. Ríos³, J. Benlloch^{1,2}, **J. Alonso**^{1,2}

¹Inst. for Instrum. for Molecular Imaging (i3M), Spanish National Research Council (CSIC), Valencia (Spain)

²Universitat Politècnica de Valencia (UPV), Valencia (Spain)

³Tesoro Imaging S.L., Valencia (Spain)

16:15–16:30

Measurement of the Distribution of Anisotropy Constants in Magnetic Nanoparticles

A.A. McGhie¹, C. Marquina^{2,3}, K. O'Grady^{1,4}, **G. Vallejo-Fernandez**¹

¹Department of Physics, University of York (UK)

²Departamento de Física de la Materia Condensada, Universidad de Zaragoza (Spain)

³Instituto de Ciencia de Materiales de Aragón (ICMA), Consejo Superior de Investigaciones Científicas (CSIC) - Universidad de Zaragoza (Spain)

⁴Liquids Research Ltd, Unit 3B Mentec, Deiniol Road, Bangor, Gwynedd (UK)

Thursday 30th May

Plenary talk - Lecture Hall (Sala Anfiteatro)

Chair: Y. Ichyanagi

9:00–9:45

Magnetic Nanoclusters and Nanoparticles

G.C. Hadjipanayis¹, F.M. Abel¹, O. Tosun¹, S. Pourmiri¹, D.J. Sellmyer², R. Skomski², B. Balasubramanian², V. Tzitzios³

¹Department of Physics and Astronomy, University of Delaware, Newark, DE (USA)

²Department of Physics and Astronomy, University of Nebraska, Lincoln, (USA)

³Chemical Engineering, Khalifa University of Science and Technology, Abu Dhabi (UAE)

Invited Talk - Lecture Hall (Sala Anfiteatro)

Chair: B. Jeyadevan

9:45–10:15

Peroxidase catalytic activity of iron oxide nanoparticles and its effect on biological systems

A.C. Moreno Maldonado¹, E.L. Winkler^{1,2,3}, M. Raineri², A. Toro Córdova⁴, L. Rodríguez^{2,3}, H.E. Troiani^{1,3}, M.L. Mojica Piscioti^{2,3}, M. Vasquez Mansilla^{2,3}, C.A. Ramos^{2,3}, G.F. Goya^{4,5}, **R.D. Zysler**^{1,2,3}, E. Lima Jr.^{2,3}

¹Instituto Balseiro, Universidad Nacional de Cuyo - CNEA, S. C. Bariloche, RN (Argentina)

²Instituto de Nanociencia y Nanotecnología (INN), Nodo Bariloche, CNEA-CONICET (Argentina)

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Invited Talk - Lecture Hall (Sala Anfiteatro)

Chair: B. Jeyadevan

10:15–10:45

Exchange-Biased oxide-based granular hetero-nanostructures of different morphologies prepared by seed mediated growth in polyol: from core-shell to multicore embedded structures

T. Gaudisson¹, G. Franceschin¹, N. Flores¹, N. Menguy², P. Saintavit², N. Yaacoub³, J.M Grenèche³, R. Valenzuela⁴, **S. Ammar**¹

¹Université Paris Diderot, Sorbonne Paris Cité, CNRS UMR-7086, Interface Traitement Organisation et Dynamique des Systèmes Lab. (ITODYS), Paris (France)

²Sorbonne Université, CNRS UMR-7590, MNHN, IRD, Institut de Minéralogie, de Physique des Matériaux et de Cosmochimie (IMPMC), Paris (France)

³Université du Maine, CNRS UMR-6283, Institut des Molécules et des Matériaux du Mans (IMMM), Le Mans (France)

⁴Universidad Nacional Autónoma de México, Instituto de Investigaciones en Materiales (IIM), Ciudad de México (México)

Invited Talk - Lecture Hall (Sala Anfiteatro)

Chair: D. Fiorani

11:15–11:45

Clustering effects in Magnetic Nanoparticles Assemblies

K. Trohidou¹, M. Vasilakaki¹, N. Ntallis¹, D. Peddis^{2,3}, D. Fiorani², A. Zuhin⁴

¹Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", Athens (Greece)

²Istituto di Struttura della Materia-CNR, Monterotondo Scalo, RM (Italy)

³Univ. Genoa, Dept. Chem. & Ind. Chem., Genoa (Italy)

⁴Sorbonne Univ., MNHN, UMR7590, IMPMC, CNRS, IRD, Paris (France)

Session Synthesis & Functionalization - Lecture Hall (Sala Anfiteatro)

Chair: R.D. Zysler

11:45–12:00

Size selective ordering phenomena in highly ordered 3D nanoparticle assemblies

E. Josten¹, M. Angst², A. Glavic³, D. Meertens¹, P. Zakalek², U. Rücker², O.H. Seeck⁴, A. Kovács¹, E. Wetterskog⁵, R.E. Dunin-Borkowski¹, L. Bergström⁶, T. Brückel²

¹Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons & Peter Grünberg Institute 5, Forschungszentrum Jülich GmbH, Jülich (Germany)

²Jülich Centre for Neutron Science (JCNS) & Peter Grünberg Institute (PGI), JARA-FIT, Forschungszentrum Jülich GmbH, Jülich (Germany)

³Paul Scherrer Institut, Villigen PSI (Switzerland)

⁴Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)

⁵Department of Engineering Sciences, Ångström Laboratory, Uppsala University (Sweden)

⁶Department of Materials and Environmental Chemistry, Stockholm University (Sweden)

12:00–12:15

Mechanistic insight into colloidal synthesis of zinc ferrite nanoparticles: an order of magnitude size gain by reducing reaction drying temperature

A. Lak, J. Lipfert

Department of Physics, Nanosystems Initiative Munich, & Center for Nanoscience, LMU Munich, Munich (Germany)

12:15–12:30

Surface ferromagnetism in $Pr_{0.5}Ca_{0.5}MnO_3$ nanoparticles as a consequence of local imbalance $Mn^{3+}:Mn^{4+}$ ratio.

J.M. Alonso^{1,2}, **P. de la Presa**^{1,3}, M. Garcia-Hernández², A. Hernando^{1,3}

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³Dpto Física de Materiales, Univ. Complutense de Madrid, Madrid (Spain)

12:30–12:45

Synthesis and magnetic properties of bisegmented diameter modulated nanowire arrays

M. Méndez, R. Caballero-Flores, J. García, S. González, V. Vega, V.M. Prida

Departamento de Física, Universidad de Oviedo, Oviedo (Spain)

12:45–13:00

Unraveling the interplay between structural and magnetic properties of anodic iron oxide nanotubes

A. Apolinário¹, C.T. Sousa¹, A.M. Pereira¹, M.P. Fernández-García², G. Oliveira¹, J. Ventura¹, J. Azevedo³, L. Andrade³, A.M. Mendes³, J.P. Araújo¹

¹IFIMUP & IN-Institute of Nanoscience and Nanotechnology, Dep. de Física e Astronomia, Universidade do Porto (Portugal)

²Dep. de Física, Universidad de Oviedo (Spain)

³LEPABE, Dep. Engenharia Química, Universidade do Porto, (Portugal)

13:00–13:15

Fe-Pd magnetic nanoparticles by solid state dewetting for hyperthermia

M. Coïsson¹, F. Celegato¹, G. Barrera¹, M. Cialone², P. Tiberto¹

¹INRIM, Advanced Materials and Life Sciences Division, Torino (Italy)

²Chemistry Department, University of Torino (Italy)

Fundamental properties - Lecture Hall (Sala Anfiteatro)

Chair: V. Salgueriño

14:45–15:00

Surface anisotropy and inter-particle interactions in arrays of magnetic nanoparticles: General formalism and applications (FMR, T_{max})

J.L. Déjardin¹, A. Franco², F. Vernay¹, **H. Kachkachi**¹

¹Université de Perpignan Via Domitia, PROMES CNR UPR8521, Perpignan (France)

²Núcleo de Matemáticas, Física y Estadística, Universidad Mayor, Santiago (Chile)

15:00–15:15

Magnetic Properties of Magnetite Nanoparticles with Different Sizes and Shapes

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15:15–15:30

Geometric frustration in ordered arrays of plasmonic nanoelements

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15:30–15:45

Random binary compacts of magnetic oxide nanoparticles: rethinking the meaning of collective behaviour

E.H. Sánchez¹, M. Vasilakaki², P.S. Normile¹, S.S. Lee³, M. Murgia^{1,6}, M.S. Andersson^{4,9}, G. Singh⁵, R. Mathieu⁴, P. Nordblad⁴, P.C. Ricci⁶, K.N. Trohidou², J. Nogués^{7,8}, **J.A. De Toro**¹

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15:45–16:00

Magnetism of dodecanethiol-capped porous gold

K. Suzuki¹, H. Zhang¹, K. Saito², J.S. Garitaonandia³, S. Kameoka⁴, A.P. Tsai⁴

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16:00–16:15

MnFe₂O₄@ γ -Fe₂O₃ core-shell nanoparticles: Magnetic anisotropy fields and exchange bias

F.G. Silva^{1,2,3}, J. Depeyrot¹, Y.L. Raikher^{4,5}, V.I. Stepanov⁴, I.S. Poperechny⁴, R. Aquino³, G. Ballon⁶, J. Geshev⁷, E. Dubois², **R. Perzynski**²

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Invited Talk - Lecture Hall (Sala Anfiteatro)

Chair: A. Fraile Rodríguez

16:15–16:45

Finding the Needle in a Haystack: Picogram Detection Enabled by Nonlinear Magnetization

V. Novosad

Materials Science Division, Argonne National Laboratory, Lemont, IL (USA)

Friday 31th May

Plenary talk - Lecture Hall (Sala Anfiteatro)

Chair: J.A. Blanco

9:00–9:45

The structure and dynamics of finite-size magnetic systems elucidated by neutron scattering

H. Schober

Institut Laue-Langevin, Grenoble (France)

Session Synthesis & Functionalization - Lecture Hall (Sala Anfiteatro)

Chair: L. del Bianco

9:45–10:00

Salt layered precursors: an effective synthesis route to obtain highly ordered L10 MPt (M = Fe, Co, Ni) particles

A. Capobianchi¹, P. Imperatori¹, S. Laureti¹, C. Cannas², A. Ardu², G. Varvaro¹

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10:00–10:15

Exchange coupled core-shell nanoparticles as building blocks for permanent magnet

B. Muzzi^{1,2}, A. López-Ortega³, M. Albino⁴, M. Petrecca⁴, C. Innocenti^{2,4}, G. Bertoni⁵, C. de Julián Fernandez⁵, **C. Sangregorio**^{2,4}

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10:15–10:30

Effect of NaOH on the structural and magnetic properties of ternary (Ni₆₀Co₄₀)₉₀Fe₁₀ nanoparticles synthesized by hydrothermal route

Y. Gaci¹, A. Guittoum², M. Hemmous², D. Martínez-Blanco³, P. Gorria⁴, J.A. Blanco⁵, T. Aouaroun¹

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⁵Department of Physics, University of Oviedo (Spain)

Session Fundamental properties - Lecture Hall (Sala Anfiteatro)

Chair: D. Serantes

11:15–11:30

Environmental oxidative ageing of iron oxide nanoparticles

L.K. Bogart¹, C. Blanco-Andujar^{1,2}, **Q.A. Pankhurst**¹

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11:30–11:45

Tuning the magnetic anisotropy and magnetotransport of self-assemblies of exchange coupled core/shell nanoparticles

F. Fabris^{1,2}, E. Lima Jr.^{1,2}, C. Quinteros^{1,2}, L. Neñer^{1,2,3}, M. Granada^{1,2,3}, M. Sirena^{1,2,3}, R.D. Zysler^{1,2,3}, H.E. Troiani^{2,3}, V. Leborán⁴, F. Rivadulla⁴, **E.L. Winkler**^{1,2,3}

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11:45–11:30

Small-Angle Neutron Scattering reveals distortions in the long-range magnetic correlation in the antiferromagnetic structure of TbCu₂

M. de la Fuente Rodríguez¹, P. Bender², D. Alba³, E.M. Jefremovas¹, J.I. Espeso¹, J. Rodríguez Fernández¹, D.P. Rojas⁴, M.L. Fdez-Gubieda⁵, A. Michels², **L. Fernández Barquín**¹

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12:00–12:15

Spontaneous self-assembly of magnetic nanoparticles

L. Balcells¹, I. Stankovic², Z. Konstantinovic³, J. Cisneros-Fernández¹, A. Alagh¹, V. Fuentes¹, L. López-Mir¹, J. Oro¹, C. Frontera¹, N. Mestres¹, A. Pomar¹, B. Martínez¹, B. Vasic³, C. García⁴

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12:15–12:30

Inter-particle magnetic correlations in assemblies of Fe₃O₄ nanoparticles

K. Chesnel¹, J. Rackham¹, B. Newbold¹, S. Kotter¹, D. Griner¹, D. Smith¹, R. Harrison², A. Reid³, M. Transtrum¹

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List of authors

- Abakumov, M.A., 12
Aballe, L., 6
Abel, F.M., 16
Ahmad, A., 4
Alagh, A., 20
Alba Venero, D., 6, 13
Alba, D., 20
Albertini, F., 8
Albino, M., 8, 14, 19
Alfonso, A., 12
Algarín, J., 16
Alonso, J., 6, 16
Alonso, J.M., 17
Amiens, C., 14
Ammar, S., 13, 16
Andersson, M.S., 2, 11, 18
Andrade, L., 17
Andrade, V., 7
Andreu, I., 9
Angelakeris, M., 12
Angelidakis, L., 16
Angst, M., 17
Antonaropoulos, G., 9
Aouaroun, T., 19
Apolinário, A., 17
Aquino, R., 9, 19
Araújo, J.P., 7, 17
Ardu, A., 19
Arriortua, O., 15
Asenjo, A., 2
Asensio, J.-M., 7
Asensio, J.M., 4, 7
Attaluri, A., 2
Aubert, A., 3
Augusto, P.A., 5
Ayadi, F., 8
Aymonier, C., 8
Azevedo, J., 17
- Bae, H., 4
Bajo, A.D., 12
Balasubramanian, B., 16
Balcells, L., 20
Baldomir, D., 15
Ballon, G., 19
Baraban, I., 10
Barandiarán, J.M., 3, 14
Barbosa, D., 5
Barnsley, L., 11
Barrera, G., 18
Barucca, G., 13
Batlle, X., 4, 18
Baumgarten, D., 12
Belec, B., 8
Belo, J.H., 7
Bender, P., 3, 7, 13, 20
Benlloch, J., 16
Berganza, E., 2
Bergström, L., 17
Bertoni, G., 11, 14, 19
Bhattacharya, K., 8
Biacchi, A.J., 8
Blanco, J.A., 8, 19
- Blanco, J.M., 13
Blanco-Andujar, C., 20
Blanco-López, M.C., 5, 6, 15
Bogart, L.K., 20
Boissière, B., 13
Bolzoni, F., 8
Bonetti, M., 8
Borchers, J.A., 2
Botana, L., 12
Brückel, T., 11, 17
Bracher, D., 10, 11
Briber, R.M., 2
Brintakis, K., 9
Brollo, M.E.F., 12
Buzzi, M., 11
- Caballero-Flores, R., 17
Cabassi, R., 8
Cabreira Gomes, R., 9
Calatayud, P., 15
Campos, A.F.C., 9
Cannas, C., 19
Capobianchi, A., 19
Cappello, J., 2
Carrey, J., 4, 5, 7
Casanova, F., 10
Castellanos-Rubio, I., 15
Castelo-Grande, T., 5
Celegato, F., 18
Cervera, L., 4
Chantrell, R., 15
Charilaou, M., 14
Chaudret, B., 4, 7
Cheng, G., 8
Chesnel, K., 20
Christensen, M., 8
Chubykalo-Fesenko, O., 2, 15
Cialone, M., 18
Cioffi, N., 5, 6
Cisneros-Fernández, J., 20
Clerc, P., 5
Coisson, M., 18
Coene, A., 12
Conde-Rubio, A., 18
Corberán, M., 16
Corte-Leon, P., 13
Cortigiani, B., 14
Cresce, A., 2
Cruz, M., 6
Cuya.H., J.L., 18
- Díaz, E., 16
Déjardin, J.L., 18
Danilyuk, A.L., 14
Das, R., 6
Dawidczyk, C., 2
de Castro Alves, L., 12
de Julián Fernández, C., 8
de Julián Fernandez, C., 14, 19
de la Figuera, J., 6
de la Fuente Rodríguez, M., 20
de la Presa, P., 17
de Masi, D., 7
de Teresa, J.M., 2
- De Toro, J.A., 2, 11, 18
Del Bianco, L., 13
del Campo, A., 14
Dennis, C., 15
Dennis, C.L., 2, 8
Depeyrot, J., 9, 19
Disch, S., 3, 11
Ditaranto, N., 5, 6
Dmitriev, A., 7
Donahue, M.J., 8
Doutch, J., 6
Dubois, E., 8, 19
Dunin-Borkowski, R.E., 17
Dupré, L., 12
Dutz, S., 6
- Echevarria-Bonet, C., 8
Efremova, M.V., 12
Eremina, R., 11
Escoda Torroella, M., 4
Espeso, J.I., 20
Espinha, A., 18
Estevez, A.M., 5
Estrader, M., 7
- Fabris, F., 20
Fantechi, E., 7, 11
Farger, P., 7
Farle, M., 12
Farrar, A., 8
Faure, S., 7
Fazlizhanov, I., 11
Fazzini, P.-F., 4, 7, 14
Fdez-Gubieda, M., 13
Fdez-Gubieda, M.L., 20
Feoktystov, A., 11
Fernández Barquín, L., 7, 8, 13, 20
Fernández-García, M.P., 3, 17
Fernández-Pacheco, R., 15
Fernández-Roldán, J.A., 2
Feygenson, M., 11
Fiorani, D., 3, 17
Flores, N., 16
Foerster, M., 6
Forzan, M., 13
Fourmy, D., 5
Fraile Rodríguez, A., 4, 18
Franceschin, G., 16
Franco, A., 18
Frontera, C., 20
Fuentes, V., 20
Fujiwara, K., 15
- Gómez-Polo, C., 4
Gabbani, A., 11
Gaci, Y., 19
Gajewska, M., 2
Galve, F., 16
Garaio, E., 6
Garanina, A.S., 12
García del Muro, M., 4
García Prieto, A., 13
García, C., 20
García, J., 17

García, J.A., 6
 García-Arribas, A., 2, 13
 Garcia-Hernández, M., 17
 Garitaonandia, J.S., 14, 15, 18
 Gaudisson, T., 16
 Gavilán, H., 15
 Gehring, A.U., 5
 Geninatti Crich, S., 13
 Geshev, J., 19
 Gigoux, V., 5
 Gil-Cartón, D., 13
 Gilmutdinov, I., 11
 Glavic, A., 17
 Goiriena-Goikoetxea, M., 2
 Goldfarb, R.B., 3
 Gomes, I.T., 7
 González, J., 16
 González, S., 17
 González-Jartín, J.M., 12
 Gonzalez Gomez, M., 12
 Gonzalez, J., 13
 Gorria, P., 19
 Goya, G.F., 15, 16
 Grüttner, C., 2
 Granada, M., 20
 Grau, D., 16
 Grenèche, J.M, 16
 Griner, D., 20
 Guittoum, A., 19
 Gusliyenko, K., 2
 Gutiérrez, J., 14

 Hadimani, R.L., 7
 Hadjipanayis, G.C., 3, 16
 Haim, L., 14
 Hallali, N., 5
 Harrison, R., 20
 Hemmous, M., 19
 Herling, F., 10
 Hernández, L., 5
 Hernando, A., 17
 Hicken, R.J., 3, 7
 Hight Walker, A.R., 8
 Hillion, A., 5
 Hiroaki, M., 18
 Hiroya, F., 18
 Honecker, D., 3, 7, 11, 13
 Howald, L., 11
 Hueso, L.E., 10

 Ibarra, A., 15
 Ibarra, M.R., 15
 Ibragimova, M., 11
 Ichiyanagi, Y., 15
 Ide, T., 15
 Iglesias, Ò., 9
 Iglesias, R., 5
 Imperatori, P., 19
 Ingla, J., 10
 Innocenti, C., 11, 14, 19
 Insausti, M., 14, 15
 Ipatov, M., 13
 Ivkov, R., 2

 Jaafar, M., 2
 Jackson, A.J., 2
 Jefremovas, E.M., 20

 Jenus, P., 8
 Jeyadevan, B., 18
 Jiles, D.C., 7
 Jin, S., 5
 Josten, E., 17
 Jouen, S., 8
 Jovanović, S., 4

 Kachkachi, H., 9, 18
 Kale, S., 7
 Kameoka, S., 18
 Kanda, K., 15
 Kapusta, Cz., 5
 Kazumasa, S., 18
 Kchaw, M., 8
 Kleibert, A., 10, 11
 Klyachko, N.L., 12
 Kmita, A., 2
 Konstantinovic, Z., 20
 Kostopoulou, A., 9
 Kotter, S., 20
 Kovács, A., 17
 Koziej, D., 2
 Kuciakowski, J., 2
 Kukharev, A.V., 14

 López-Mir, L., 20
 López-Ortega, A., 11, 19
 López-Sánchez, J., 14
 Labarta, A., 4, 18
 Lacroix, L.-M., 4
 Lafuerza, S., 2
 Lak, A., 17
 Lappas, A., 9
 Larumbe, S., 4
 Laureti, S., 19
 Le Breton, J.M., 8
 Le Normand, F., 14
 Leble, S., 10
 Leborán, V., 20
 Lecante, P., 14
 Lee, S.S., 2, 18
 Leite, R.C., 9
 Leliaert, J., 12
 Lesniak, B., 5
 Lezama, L., 15
 Liebl, M., 12
 Lima Jr., E., 15, 16, 20
 Lipfert, J., 17
 Lopez, S., 5
 Lubk, A., 5
 Lund, S., 15
 Lysenko, O., 7

 Méndez, M., 17
 Maât, N., 8
 Madugundo, R., 3
 Maenosono, S., 11
 Magén, C., 2
 Majetich, S.A., 4
 Majouga, A.G., 12
 Marín, P., 14
 Marbaix, J., 4, 7
 Marcano, L., 13
 Marcos, J., 5
 Marquina, C., 15, 16
 Martín, F., 4

 Martín-Cid, A., 3
 Martín-Rey, X., 9
 Martínez, B., 20
 Martínez-Blanco, D., 19
 Martínez-García, J.C., 15
 Martinez-Amesti, A., 15
 Mascaraque, A., 6
 Mathieu, R., 2, 3, 11, 18
 Mawass, M.A., 13
 Mayoral, A., 15
 McGhie, A.A., 16
 Meertens, D., 17
 Mendes, A.M., 17
 Menguy, N., 16
 Merchán, L., 5
 Mestres, N., 20
 Michalik, J.M., 5
 Michalik, M., 5
 Michels, A., 4, 20
 Mihi, A., 18
 Milan, A., 7
 Mille, N., 4, 7
 Mishra, D., 8
 Miyamura, H., 18
 Mnasri, W., 13
 Moffat, T.P., 8
 Mojica Piscioti, M.L., 16
 Monteserín, M., 4
 Morales, M., 15
 Morales, M.P., 12
 Moreno Maldonado, A.C, 16
 Moya, C., 4
 Moyano, A., 5, 6, 15
 Muela, A., 13
 Murgia, M., 18
 Muzzi, B., 14, 19
 Myrovali, E., 12

 Nachbaur, V., 8
 Nakamae, S., 8
 Nalench, Y.A., 12
 Nandakumaran, N., 11
 Natividad, E., 6, 9
 Naumenko, V.A., 12
 Navarro, E., 14
 Neñer, L., 20
 Nemati, Z., 6
 Newbold, B., 20
 Nogués, J., 11, 18
 Nolting, F., 10, 11
 Nordblad, P., 11, 18
 Normile, P.S., 2, 11, 18
 Novosad, V., 19
 Ntallis, N., 17

 O'Grady, K., 16
 Oliveira, G., 17
 Oro, J., 20
 Ortega, D., 6
 Orue, I., 6, 13, 15
 Oshima, A., 15

 Pérez-Landazábal, J.I., 4
 Pablo-Navarro, J., 2
 Pallás, E., 16
 Panina, L., 10
 Pankhurst, Q.A., 6, 20

Parvizian, M., 13
 Peddis, D., 3, 4, 11, 15, 17
 Pellegrino, T., 9
 Pereira, A.M., 7, 17
 Perez, L., 6
 Perez-Murano, F., 18
 Perzynski, R., 8, 9, 19
 Petrecca, M., 8, 14, 19
 Petrucci, G., 7, 11
 Peyre, V., 8
 Phan, M.-H., 6
 Phillipot, K., 14
 Piñeiro, Y., 12
 Pineider, F., 7, 11
 Pires, A.L., 7
 Pitala, K., 2
 Plazaola, F., 15
 Poggio, M., 10
 Pohl, D., 5
 Pomar, A., 20
 Pomper, M.G., 2
 Poperechny, I.S., 19
 Pourmiri, S., 16
 Prida, V.M., 17
 Prieto, G., 12
 Prischepa, S.L., 14

 Quesada, A., 6, 8
 Quintana, I., 14
 Quinteros, C., 20

 Rücker, U., 17
 Ríos, A., 16
 Rackham, J., 20
 Raikher, Y.L., 19
 Raineri, M., 16
 Ramos, C.A., 16
 Reguero, M., 8
 Reid, A., 20
 Reidl, J., 8
 Rellinghaus, B., 5
 Ren, Y., 7
 Respaud, M., 14
 Restrepo, J., 9
 Rhee, I., 4
 Ribeiro, M., 10
 Ricci, P.C., 18
 Rico, J., 5
 Rigla, J., 16
 Rivadulla, F., 20
 Rivas, J., 12
 Rivas, M., 5, 6, 15
 Roca, A.G., 11
 Rodionova, V., 10
 Rodríguez Fernández, J., 20
 Rodríguez, I., 12
 Rodrigo, I., 6, 15
 Rodriguez, L., 16
 Roger, M., 8
 Rojas, D.P., 8, 20
 Ruggiero, M., 13
 Ruiz-Gomez, S., 6
 Rusz, J., 5

 Sánchez, E.H., 11, 18
 Safeer, C.K., 10

 Sagasta, E., 10
 Sainctavit, P., 16
 Sainz, M.J., 12
 Saito, K., 18
 Salazar, D., 3
 Salgueiriño, V., 10
 Salgueiriño, V., 13
 Salinas, H.D., 9
 Salvador, M., 5, 6, 15
 Sandre, O., 6
 Sandre, S., 13
 Sangregorio, C., 7, 8, 11, 14, 19
 Sanz, B., 15
 Sarcina, L., 5, 6
 Sarkar, M., 8
 Satoh, A., 15
 Saura-Múzquiz, M., 8
 Savchenko, A.G., 12
 Savchenko, T.M., 10, 11
 Schönhöbel, A.M., 3
 Schier, P., 12
 Schliesch, T., 8
 Schneider, S., 5
 Schober, H., 19
 Searson, P.C., 2
 Seeck, O.H., 17
 Sellmyer, D.J., 16
 Serantes, D., 15
 Serrano, A., 14
 Serrano, M.C., 12
 Sgarbossa, P., 13
 Sharifabad, M.E., 3, 7
 Shestakov, A., 11
 Shih, J.W., 2
 Shull, R., 15
 Sieni, E., 13
 Sikora, M., 2
 Silva, F.G., 9, 19
 Singh, G., 2, 18
 Sirena, M., 20
 Skomski, R., 16
 Smith, D., 20
 Socoliuc, V., 15
 Soucaille, R., 3, 7
 Soulantika, K., 4, 7
 Sousa, C.T., 17
 Sousa, J.B., 7
 Southern, P., 6
 Spasova, M., 12
 Spassov, S., 6
 Spirou, S., 6
 Spizzo, F., 13
 Spreitzer, M., 4
 Srikanth, H., 2, 6
 Stankovic, I., 20
 Steinhoff, U., 6, 12
 Stepanov, V.I., 19
 Stoian, D., 7
 Stolt, M.J., 5
 Suzuki, K., 18

 Tabero, A., 12
 Tahar, B., 13
 Teixeira, J.M., 3
 Telling, N.D., 3, 7
 Terranova, N., 8

 Testa Anta, M., 10
 Tew, W.L., 8
 Tiberto, P., 18
 Timm, M., 11
 Toro Córdoba, A., 16
 Torres, T.E., 15
 Tosun, O., 16
 Transtrum, M., 20
 Trohidou, K., 9, 17
 Trohidou, K.N., 3, 18
 Troiani, H.E., 16, 20
 Tsai, A.P., 18
 Txoperena, O., 10
 Tzitzios, V., 16

 Udovč, L., 4
 Urtizberrea, A., 9

 Vékas, L., 15
 Vadillo, V., 14
 Valencia, S., 13
 Valenzuela, R., 16
 Vallejo-Fernandez, G., 16
 Vallet-Regí, M., 10
 Van Bee, W., 7
 Varvaro, G., 19
 Vasic, B., 20
 Vasilakaki, M., 9, 17, 18
 Vasquez Mansilla, M., 16
 Vavassori, P., 11
 Vaz, C.A.F., 11
 Vega, V., 17
 Velarde, E., 2
 Ventura, J., 17
 Vereshchagin, M., 10
 Vernay, F., 9, 18
 Vieira, C.A.M., 9
 Vijayakumar, J., 11
 Villanueva, A., 12
 Vukomanović, M., 4

 Wells, J., 6
 Wetterskog, E., 17
 Wiedwald, U., 12
 Wiekhorst, F., 12
 Wilczyńska-Michalik, W., 5
 Winkler, E.L., 16, 20
 Wolf, D., 5
 Woodard, L.E., 2
 Woods, S.I., 8
 Wyss, M., 10

 Yañez Vilar, S., 12
 Yaacoub, N., 3, 16
 Yan, W., 10
 Yi, D., 7

 Zákutná, D., 3, 11
 Zakalek, P., 17
 Zhang, H., 18
 Zhang, X., 7
 Zhukov, A., 13
 Zhukova, V., 13
 Zuhin, A., 17
 Zukrowski, J., 2
 Zysler, R.D., 16, 20