

Programme

INTERNATIONAL MEETING FOR RESEARCHERS IN

MATERIALS

& PLASMA

TECHNOLOGY - IMRMPT

**Medellín
Colombia**

**June 2-4,
2021**



Foristom
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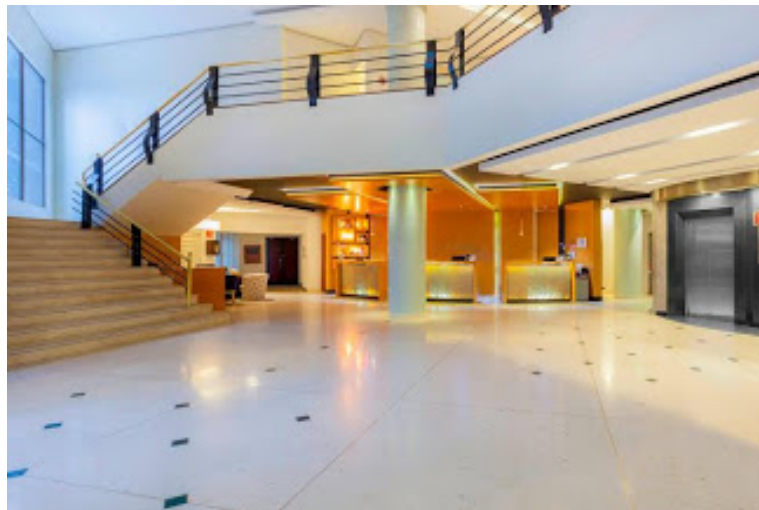
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Invited Speakers / Conferencistas Invitados

- ✓ Dra. Raquel González Arrabal
Universidad Politécnica de Madrid, Madrid, Spain
- ✓ Dr. Ovidio Yordanis Peña Rodríguez
Universidad Politécnica de Madrid, Madrid, Spain
- ✓ Dr. Andrés Díaz Lantada
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Universidad de la República, Montevideo, Uruguay
- ✓ Dr. Ana Corbacho
Universidad de la República, Montevideo, Uruguay
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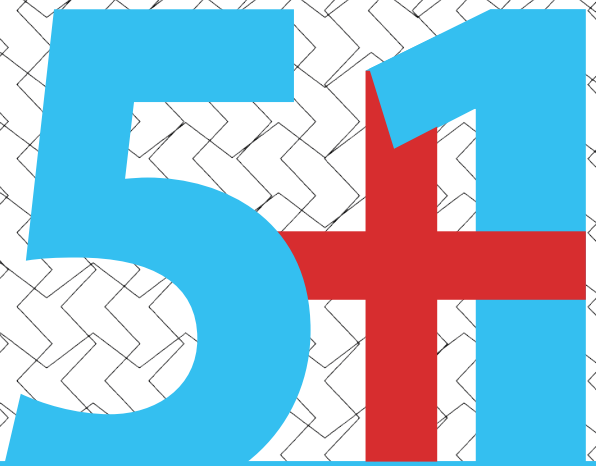
Wednesday, 02 June 2021	Earth room
	Earth room
Thursday, 03 June 2021	Air room
	Water room
	Fire room
Friday, 04 June 2021	Earth room
	Air room
	Water room
	Fire room

PROGRAM / PROGRAMA

5+1 IMRMPT

Topics

- New Materials
- Structural Integrity
- Renewable Energy
- Biomedical Coatings
- Additive Manufacturing
- Non Destructive Evaluation
- Characterization of Materials
- Thin Films and Nanomaterials
- Surface Hardening Processes
- Wear and Corrosion/Oxidation
- Modeling, Simulation and Diagnostics
- Plasma Applications and Technologies
- Education on Science, Engineering and Technology
- Surface Modification (Ion Implantation, Ion Nitriding, Magnetron Sputtering, Cathodic Arc, Sol-Gel, Thermal Spray)
- Science, Engineering, Technology and Innovation for Social Inclusion



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SECOND DAY / SEGUNDO DÍA

3 June 2021 / 3 de junio de 2021

DAY DÍA /	THURSDAY MORNING / JUEVES MAÑANA
7:30 – 8:00	Coffee / Café
8:00 – 8:20	Oral Presentation ID 10: Implementation of sachu inchi oil as asphaltite solvent Speaker / Ponente: Nathaly Luisana Bustos Morales Conference Room / Auditorio: Earth room
	Oral Presentation ID 09: Electrically conductive improvement of silver nanowires thin films through mechanical post-deposit techniques Speaker / Ponente: Andrés Mauricio Bernal Forigua Conference Room / Auditorio: Air room
	Oral Presentation ID 14: Extended super-exchange interaction in the spintronically applicable magnetic semiconductor Tb_2FeCoO_6 Speaker / Ponente: Jairo Roa-Rojas Conference Room / Auditorio: Water room
	Oral Presentation ID 23: Determination of a predictive statistical model for AISI 316 steel sulfidic corrosion rate Speaker / Ponente: Robinson Andrés Mancilla Estupiñán Conference Room / Auditorio: Fire room
8:20 – 8:40	Oral Presentation ID 11: Thermal and structural characterization of synthetic Zeolite and its evaluation as a microwave radiation susceptor Speaker / Ponente: Johan Alexander Brand Galvis Conference Room / Auditorio: Earth room
	Oral Presentation ID 17: Study of the pseudogap in YBCO and NdBCO superconductors from resistance measurements Speaker / Ponente: Adriana Lizeth Blandon Pedraza Conference Room / Auditorio: Air room
	Oral Presentation ID 16: A study of the structural, magnetic, and electrical properties of the $Ba_{1-x}Na_xCoO_3$ compounds ($x = 0.25, 0.5, 0.75$) Speaker / Ponente: Carlos Augusto Estrada Rodríguez Conference Room / Auditorio: Water room
	Oral Presentation ID 34: Numerical design of the filtering process of an MSPD-based extraction plant through CFD-DEM Speaker / Ponente: Juan David Argüello Plata Conference Room / Auditorio: Fire room

8:40 – 9:00	Oral Presentation ID 13: Characterization of synthetic zeolite and its application as a filtering system for production water in the oil industry Speaker / Ponente: Divey Juliana Ortigón Ovalle Conference Room / Auditorio: Earth room
	Oral Presentation ID 45: Universality and the thermoelectric transport properties through quantum dots systems: seeking for conditions that could improve the efficiency Speaker / Ponente: Roberto Franco Conference Room / Auditorio: Air room
	Oral Presentation ID 35: Characterization of steel waste and analysis for use as a material in the construction of pavements Speaker / Ponente: Ricardo Ochoa Díaz Conference Room / Auditorio: Water room
	Oral Presentation ID 190: Comparison of the thermal conductivity of fique non woven materials using two measuring techniques Speaker / Ponente: Rolando Guzmán López Conference Room / Auditorio: Fire room
9:00 – 9:20	Oral Presentation ID 19: Compositional characterization of hemp fibers grown in Boyacá Speaker / Ponente: Yusely Sanchez Conference Room / Auditorio: Earth room
	Oral Presentation ID 58: Kondo superlattices: one dimensional approach Speaker / Ponente: Julietta Sophia Mendivelso Conference Room / Auditorio: Air room
	Oral Presentation ID 37: Efficiency of concrete replaced simultaneously by electric arc furnace slag and recycled ground glass in the construction of rigid pavements Speaker / Ponente: Yasmin Andrea Pérez Rojas Conference Room / Auditorio: Water room
	Oral Presentation ID 57: Modeling of a vegetable oils extractor press for domestic use Speaker / Ponente: Laura Fernanda Lara Ojeda Conference Room / Auditorio: Fire room
9:20 – 9:40	Oral Presentation ID 22: Thermal behavior of briquettes based on coke fines and coal fines and its correlation with of the proximate analysis Speaker / Ponente: María Fernanda Soto Rivero Conference Room / Auditorio: Earth room
	Oral Presentation ID 59: Sintering of anodized titanium dioxide nanostructures and its use in the photocatalytic degradation of methylene blue in water Speaker / Ponente: Ingrid Paola Rivera Bermudez Conference Room / Auditorio: Air room
	Oral Presentation ID 41: Bismuth adsorption and diffusion on the MgO (001) surface Speaker / Ponente: Gladys Patricia Abdel Rahim Garzon Conference Room / Auditorio: Water room
	Oral Presentation ID 66: Diagnosis of prostate cancer with magnetic resonance images, scaling analysis and the quantum cluster algorithm Speaker / Ponente: Jesús Reyes-Bruno Conference Room / Auditorio: Fire room

9:40 – 10:00	Oral Presentation ID 24: Compositional, thermal and microstructural characterization of kaolin to obtain metakaolin as a supplementary alternative cementitious agent Speaker / Ponente: Nelson Torres Conference Room / Auditorio: Earth room
	Oral Presentation ID 77: Bleustein-Gulyaev wave propagation in topological piezoelectric crystals Speaker / Ponente: David Fernando Rojas Vallecilla Conference Room / Auditorio: Air room
	Oral Presentation ID 69: Fractal approach with clustering algorithm in magnetic resonance imaging for breast cancer diagnosis Speaker / Ponente: Kevin De La Ossa Doria Conference Room / Auditorio: Water room
	Oral Presentation ID 42: Structural evolution and magnetic aspects in nanostructured (Fe ₉₂ Zr ₈) ₉₆ B ₄ alloys Speaker / Ponente: Diego Garzon Conference Room / Auditorio: Fire room
10:00 – 10:20	Coffee / Café
10:20 – 10:40	Oral Presentation ID 27: Characterization of refractory bricks used in the coke processing kilns in Colombia Speaker / Ponente: John Freddy Gelves Díaz Conference Room / Auditorio: Earth room
	Oral Presentation ID 83: Atomic force microscope based local anodic oxidation for periodic structures fabrication and their use as diffraction gratings Speaker / Ponente: Carolina Mendoza Luna Conference Room / Auditorio: Air room
	Oral Presentation ID 15: Critical superconducting parameters obtained from the analysis of thermal fluctuations in SmBa ₂ Cu ₃ O _{7-d} Speaker / Ponente: Jairo Roa-Rojas Conference Room / Auditorio: Water room
	Oral Presentation ID 86: Analysis of the influence of shot peening in the fatigue strength of SAE 5160 steel trough numerical modeling Speaker / Ponente: Ana Sofia Arellano Molina Conference Room / Auditorio: Fire room

10:40 – 11:00	<p>Oral Presentation ID 31: Evaluation of specified and manufactured Colombian commercial cements by performance Speaker / Ponente: Carlos Gabriel Hernández Carrillo Conference Room / Auditorio: Earth room</p>
	<p>Oral Presentation ID 90: Corrosion resistance evaluation of carbon and vanadium-based sputtered coatings on AISI 1045 steel substrate in molds with applications on polyethylene terephthalate bottles manufacturing process Speaker / Ponente: Camilo Andres Vera Fernandez Conference Room / Auditorio: Air room</p>
	<p>Oral Presentation ID 75: Surface plasmon polaritons in a topological Weyl semimetal and ionic crystal system on the Voigt configuration Speaker / Ponente: Jorge Luis Huila Portillo Conference Room / Auditorio: Water room</p>
	<p>Oral Presentation ID 88: Spin compensation, critical and discontinuous transitions behaviors in a Spin-(5/2.7/2) ferrimagnet Speaker / Ponente: Nicolás De La Espriella Vélez Conference Room / Auditorio: Fire room</p>
11:00 – 11:20	<p>Oral Presentation ID 48: Elaboration of an eco-brick based on manure, coffee stem and cement Speaker / Ponente: July Andrea Gómez Camperos Conference Room / Auditorio: Earth room</p>
	<p>Oral Presentation ID 92: Preparation and study of thermally treated CuInSe₂ thin films for photovoltaic application Speaker / Ponente: Clara Lilia Calderón Triana Conference Room / Auditorio: Air room</p>
	<p>Oral Presentation ID 85: Energetics at the T-MnO₂/graphene interface Speaker / Ponente: César Ortega López Conference Room / Auditorio: Water room</p>
	<p>Oral Presentation ID 96: Comparison of the control of an inverted pendulum using fractional control Speaker / Ponente: Maher Kuzbari Conference Room / Auditorio: Fire room</p>

11:20 – 11:40	Oral Presentation ID 49: Evaluation of the mechanical properties of a concrete block obtained from asphalt pavement milling material Speaker / Ponente: Haidee Y. Jaramillo Conference Room / Auditorio: Earth room
	Oral Presentation ID 93: Influence of target power and temperature on roughness and tribological behavior of carbon and vanadium-based coatings on AISI 1045 steel substrate obtained by sputtering as possible use in polyethylene terephthalate bottles blow preform molds Speaker / Ponente: Rodrigo Sorzano Dueñas Conference Room / Auditorio: Air room
	Oral Presentation ID 36: Blast furnace dust: new material to be used in the manufacture of asphalt mixtures for pavements Speaker / Ponente: Ricardo Ochoa Díaz Conference Room / Auditorio: Water room
	Oral Presentation ID 100: Intelligent techniques applied to the correction of ectopic beats Speaker / Ponente: Juan Felipe Puentes Velásquez Conference Room / Auditorio: Fire room
11:40 – 12:00	Oral Presentation ID 29: Mechanical and compositional evaluation of granulated blast furnace slag mortars alkaline-activated by $\text{Na}_2\text{SiO}_3/\text{Na}_2\text{CO}_3$ Speaker / Ponente: Nelson Torres Conference Room / Auditorio: Earth room
	Oral Presentation ID 106: Surface roughness effects on scattering of electromagnetic waves in topological insulators Speaker / Ponente: Juan Carlos Granada Echeverry Conference Room / Auditorio: Air room
	Oral Presentation ID 38: Characterization of concrete mixtures produced with electric arc furnace slag aggregates and recycled ground glass Speaker / Ponente: Yasmin Andrea Pérez Rojas Conference Room / Auditorio: Water room
	Oral Presentation ID 105: Hydrodynamic cavitation of heavy crude oil in Vortex reactor using computational fluid dynamics simulation Speaker / Ponente: Rafael Ricardo Quiroga Higuera Conference Room / Auditorio: Fire room
12:20 – 13:40	Lunch Break / Almuerzo

<div>DAY DÍA</div> <div>HOUR HORA</div>	THURSDAY AFTERNOON / JUEVES TARDE
14:00 – 14:20	Oral Presentation ID 54: Characterization of physical and mechanical properties of lightweight concrete made using low-density expanded clay aggregates Speaker / Ponente: Jorge Fernando Márquez Peñaranda Conference Room / Auditorio: Earth room
	Oral Presentation ID 116: Ferromagnetic resonance in ZnFe ₂ O ₄ thin films: a modeling of the experimental data by using Python Speaker / Ponente: Lider Samir Galeano Molina Conference Room / Auditorio: Air room
	Oral Presentation ID 87: Transition metal diselenide monolayers Speaker / Ponente: Miguel Espitia Rico Conference Room / Auditorio: Water room
	Oral Presentation ID 107: Numerical study of the performance of a thermoelectric generator built with phase change materials Speaker / Ponente: Martha Sofia Orjuela Abril Conference Room / Auditorio: Fire room
14:20 – 14:40	Oral Presentation ID 131: Modeling of the inverse problem in electron-atom collisions at low energies Speaker / Ponente: Luis Arturo Alcalá Varilla Conference Room / Auditorio: Earth room
	Oral Presentation ID 146: Porous magnetic nanocomposite of faujasite zeolite impregnated with magnesium ferrite nanoparticles for adsorption of heavy metal ions Speaker / Ponente: Letícia Ferreira Lacerda Schildt Conference Room / Auditorio: Air room
	Oral Presentation ID 134: Biopolymer synthesized based on water and starch from potato and cassava organic residues Speaker / Ponente: Daniel Nicolás Quintana Mariño Conference Room / Auditorio: Water room
	Oral Presentation ID 60: Impact of mechanical properties of structural steel by three transfer modes in gas metal arc welding Speaker / Ponente: Diego Armando Díaz Nova Conference Room / Auditorio: Fire room

14:40 – 15:00	Oral Presentation ID 67: Effect of the incorporation of gold and silver nanoparticles in the spectroscopy properties of Nd ³⁺ doped in GeO ₂ -PbO glass Speaker / Ponente: Alexandra Cardona Conference Room / Auditorio: Earth room
	Oral Presentation ID 147: Adsorption study of manganese (II) by hydroxyapatite nanoparticles Speaker / Ponente: Thamara Machado De Oliveira Ruellas Conference Room / Auditorio: Air room
	Oral Presentation ID 132: Elements of differential geometry applied in the control of a synchronous generator Speaker / Ponente: Carlos Ramírez Conference Room / Auditorio: Water room
	Oral Presentation ID 113: Effects of an external magnetic field and exchange interactions on Ising-type ferromagnets Speaker / Ponente: Fabio Anderson Padilla Montiel Conference Room / Auditorio: Fire room
15:00 – 15:20	Oral Presentation ID 68: Effect of the crystalline field on the spectroscopic properties of the Nd ³⁺ ion Speaker / Ponente: Xiomara Quintero Conference Room / Auditorio: Earth room
	Oral Presentation ID 148: Ultrafine polycarbonate:pectin polymeric blends for topical use Speaker / Ponente: Bruna Santostaso Marinho Conference Room / Auditorio: Air room
	Oral Presentation ID 128: Design of a controller using linear matrix inequalities for a quarter car model and its comparison with a robust control H _∞ Speaker / Ponente: Mauricio Holguin Conference Room / Auditorio: Water room
	Oral Presentation ID 137: Implementation of an artificial neural network in the analysis of the volume fraction in two-phase flow of water and oil Speaker / Ponente: Carlos M. Ruiz Díaz Conference Room / Auditorio: Fire room

15:20 – 15:40	Oral Presentation ID 72: Advances on mechanical characterization and modeling of 3D printed auxetic scaffolds Speaker / Ponente: Andres Mauricio Diaz Melgarejo Conference Room / Auditorio: Earth room
	Oral Presentation ID 149: Antifungal activity of thermoplastic starch composite films reinforced with copper oxide nanoparticles Speaker / Ponente: Marcelo Ávila Domínguez Conference Room / Auditorio: Air room
	Oral Presentation ID 98: Technical comparison of command types for automatic generation control in SCADA-AGC-EMS systems with International Electrotechnical Commission based communication protocols Speaker / Ponente: Jason Molina Conference Room / Auditorio: Water room
	Oral Presentation ID 89: Ferrimagnetic ising-type spin-(3/2.7/2) system: a Monte Carlo study Speaker / Ponente: Nicolás De La Espriella Vélez Conference Room / Auditorio: Fire room
15:40 – 16:00	Oral Presentation ID 78: Structural and microstructural behavior of KNN:Nd in the function of powder synthesis process Speaker / Ponente: Luisa Fernanda Dávila Espinosa Conference Room / Auditorio: Earth room
	Oral Presentation ID 150: Starch biodegradable sachets reinforced with faujasite zeolite for release of potassium fertilizer Speaker / Ponente: João Otávio Donizette Malafatti Conference Room / Auditorio: Air room
	Oral Presentation ID 143: Manufacturing a rigid foam using tetra pak post-consumer packages Speaker / Ponente: Edwin Hernando Salazar Jurado Conference Room / Auditorio: Water room
	Oral Presentation ID 21: Analysis of the concentration of nitrogen and titanium ions simultaneously implanted in low-alloy steels Speaker / Ponente: Christian Calero Conference Room / Auditorio: Fire room
16:00 – 16:20	Coffee / Café

16:20 – 16:40	<p>Oral Presentation ID 55: Evaluation of the expansion capacity of the clays of San José de Cúcuta, Colombia, when subjected to calcination at temperatures above 1000 °C Speaker / Ponente: Jorge Fernando Márquez Peñaranda Conference Room / Auditorio: Earth room</p>
	<p>Oral Presentation ID 151: Obtaining ultrafine ceramic fibers of Nb₂O₅ for application in photocatalysis Speaker / Ponente: Mariana Rodrigues Meirelles Conference Room / Auditorio: Air room</p>
	<p>Oral Presentation ID 133: Discrete-time linear quadratic regulator control with genetic algorithm for a back-to-back converter applied to wind energy conversion Speaker / Ponente: Carlos Ramírez Conference Room / Auditorio: Water room</p>
	<p>Oral Presentation ID 40: Exotic quantized flux patterns (droplets, chains and cluster) in superconductors Speaker / Ponente: José José Barba Ortega Conference Room / Auditorio: Fire room</p>
16:40 – 17:00	<p>Oral Presentation ID 79: Estimation of mechanical milling characteristic parameters to explain the structural transformation of TiO₂ Speaker / Ponente: Luis Carlos Sánchez Pacheco Conference Room / Auditorio: Earth room</p>
	<p>Oral Presentation ID 160: Evaluation of copper oxide nanoparticles and Cu²⁺ ions as micronutrient release and cytotoxic effect Speaker / Ponente: Elaine Cristina Paris Conference Room / Auditorio: Air room</p>
	<p>Oral Presentation ID 115: Topological stereotomic structure using palm rachis applied to architectural design Speaker / Ponente: Innias Miguel Cadena González Conference Room / Auditorio: Water room</p>
	<p>Oral Presentation ID 155: Modeling the growth dynamic of fruit trees under a water deficit scenario Speaker / Ponente: Edwin Fernando Duque Marín Conference Room / Auditorio: Fire room</p>

17:00 – 17:20	Oral Presentation ID 95: 3D printed flexible materials applied to soft robotics Speaker / Ponente: Astrid Rubiano Fonseca Conference Room / Auditorio: Earth room
	Oral Presentation ID 161: Development of Nb ₂ O ₅ ceramic nanofibers by electrospinning for CO ₂ photoreduction Speaker / Ponente: Ana Carolina Figueiredo Prado Conference Room / Auditorio: Air room
	Oral Presentation ID 112: Effects of oxygen vacancy in the interfaz T-MnO ₂ /grafeno Speaker / Ponente: César Ortega López Conference Room / Auditorio: Water room
	Oral Presentation ID 108: Development of a numerical methodology for evaluating the performance of thermoelectric generators based on their technical specifications Speaker / Ponente: Martha Sofia Orjuela Abril Conference Room / Auditorio: Fire room
17:20 – 17:40	Oral Presentation ID 101: Effects of alkaline treatments on natural fibers Speaker / Ponente: Paula Gabriela Rojas Montejo Conference Room / Auditorio: Earth room
	Oral Presentation ID 167: Agglomeration time of selenium nanoparticles in a liquid medium by means of a pulsed laser ablation system Speaker / Ponente: Rogelio Ospina Conference Room / Auditorio: Air room
	Oral Presentation ID 91: Structural, electronic and magnetic properties of VSe ₂ , CrSe ₂ , MoSe ₂ y WSe ₂ compound: a first-principles study Speaker / Ponente: Miguel Espitia Rico Conference Room / Auditorio: Water room
	Oral Presentation ID 127: Modeling of the collision of an electron with a hydrogen atom using Jost functions Speaker / Ponente: Luis Arturo Alcalá Varilla Conference Room / Auditorio: Fire room

17:40 – 18:00	<p>Oral Presentation ID 102: Evaluation of physicochemical properties of Nopal (<i>Opuntia ficus indica</i>) as bio coagulant-flocculant for water treatment Speaker / Ponente: Andrés Fernando Rivera Cañón Conference Room / Auditorio: Earth room</p>
	<p>Oral Presentation ID 202: Effect of polarity, depth and welding current on operational performance of underwater wet welding with austenitics stainless steel coated electrodes Speaker / Ponente: Alphonsus Henrique Clemente Cardoso Conference Room / Auditorio: Air room</p>
	<p>Oral Presentation ID 109: Iron-oil palm fiber biocomposites for phosphorus removal in aqueous solution Speaker / Ponente: Anyi Paola Ramirez Muñoz Conference Room / Auditorio: Water room</p>
	<p>Oral Presentation ID 138: Analysis of liquid-liquid (water and oil) two-phase flow in vertical pipes, applying artificial intelligence techniques Speaker / Ponente: Carlos M. Ruiz Díaz Conference Room / Auditorio: Fire room</p>
18:00 – 18:20	<p>Oral Presentation ID 104: Thermal aspects to be considered in the composition of the mixture for the production of ceramic materials Speaker / Ponente: Gustavo Guerrero Gómez Conference Room / Auditorio: Earth room</p>
	<p>Oral Presentation ID 12: Physicochemical characterization of a photopolymeric material loaded with copper nano-additives Speaker / Ponente: Daniel Lizarazo Conference Room / Auditorio: Air room</p>
	<p>Oral Presentation ID 120: Modification by sputtering of grounding electrodes, evaluation of their electrical and anticorrosive performance Speaker / Ponente: Yecid Javier Salas Sarmiento Conference Room / Auditorio: Water room</p>
	<p>Oral Presentation ID 46: Vortex gel matter -scaffold structure- in a superconducting system Speaker / Ponente: José José Barba Ortega Conference Room / Auditorio: Fire room</p>

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