

# Programme

INTERNATIONAL MEETING FOR RESEARCHERS IN  
**MATERIALS**  
**& PLASMA**  
TECHNOLOGY - IMRMPT

Medellín  
Colombia

June 2-4,  
2021



**Foristom**  
Foundation

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Universidade Federal de Mato Grosso, Brazil
- Dr. (c) Anderson Sandoval Amador  
Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina

## 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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KAMAX S.L.U., Valencia
- ✓ Dr. Juan Muñoz Saldaña  
Laboratorio Nacional de Proyección, México
- ✓ Dr. Mariana Pereyra Perez  
Universidad de la República, Montevideo, Uruguay
- ✓ Dr. Ana Corbacho  
Universidad de la República, Montevideo, Uruguay
- ✓ Dr. Claudinei de Souza Guimaraes  
Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil
- ✓ Dra. Linda Elcida Gil Lozada  
Universidad Nacional Experimental Politécnica Antonio José de Sucre, Puerto Ordaz, Venezuela



## CONFERENCE VENUE



## CONFERENCE ROOM / AUDITORIO

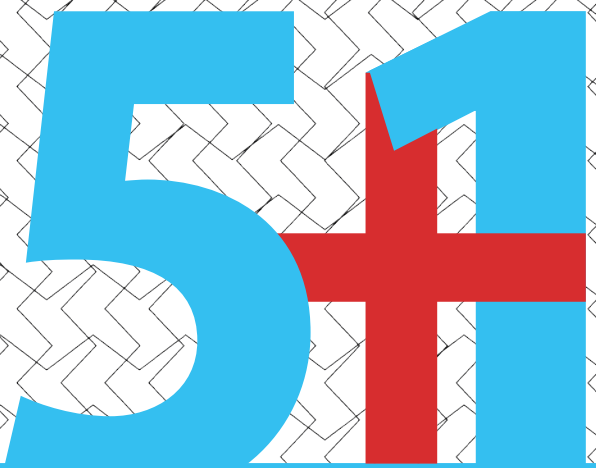
<b>Wednesday, 02 June 2021</b>	<b>Earth room</b>
	<b>Earth room</b>
<b>Thursday, 03 June 2021</b>	<b>Air room</b>
	<b>Water room</b>
	<b>Fire room</b>
<b>Friday, 04 June 2021</b>	<b>Earth room</b>
	<b>Air room</b>
	<b>Water room</b>
	<b>Fire room</b>

***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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## THIRD DAY / TERCER DÍA

4 June 2021 / 4 de junio de 2021

DAY DÍA	FRIDAY MORNING / VIERNES MAÑANA
HOUR HORA	
7:30 – 8:00	Coffee / Café
8:00 – 8:20	<p><b>Oral Presentation ID 114:</b> Effect of natural fibers with and without additional treatment in mixtures of hydraulic cement mortar  <b>Speaker / Ponente:</b> Carlos Eduardo Martínez Suárez  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 30:</b> Effect of nopal (<i>Opuntia ficus indica</i>) as corrosion inhibition of structural reinforcement steel in calcium hydroxide solution  <b>Speaker / Ponente:</b> Carlos Gabriel Hernández Carrillo  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 118:</b> Using computer vision techniques for contour detection in underwater wet welding: an exploratory study  <b>Speaker / Ponente:</b> Jorge Luis Ortiz Solano  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 158:</b> Comparison of linear, bilinear and hyperelastic models for the periodontal ligament  <b>Speaker / Ponente:</b> Juan Diego Rodríguez Ferrer  <b>Conference Room / Auditorio:</b> Fire room</p>
8:20 – 8:40	<p><b>Oral Presentation ID 117:</b> Characterization of the material of a clamp used in a mechanical resistance testing machine  <b>Speaker / Ponente:</b> Naren Yesith Perez Rangel  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 188:</b> Corrosion analysis in saline environments of carbon steel protected by galvanizing and polymeric painting  <b>Speaker / Ponente:</b> Jharold Navarro Barón  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 121:</b> Experimental conditions for the generation of thin films type two-layer semiconductor p and n of zinc oxide  <b>Speaker / Ponente:</b> Yecid Javier Salas Sarmiento  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 165:</b> Computational model of intrinsic neuronal dynamics in neurophysiological processes involved in solving highly complex brain problems: synthesis  <b>Speaker / Ponente:</b> Eduard Gilberto  <b>Conference Room / Auditorio:</b> Fire room</p>

8:40 – 9:00	<p><b>Oral Presentation ID 119:</b> Electronic structure of NiFe<sub>2</sub>O<sub>4</sub> thin films growth on different substrates  <b>Speaker / Ponente:</b> Johanna Gil Monsalve  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 53:</b> Technical and economical evaluation of the energy use from municipal solid waste in Sogamoso, Colombia  <b>Speaker / Ponente:</b> Ariam Lozano  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 25:</b> Comparison and analysis of 4% Ni doping in Co<sub>3</sub>O<sub>4</sub> nanostructures obtained by Hydrothermal and sol-gel techniques using Raman spectroscopy  <b>Speaker / Ponente:</b> Leydi Julieta Cárdenas Flechas  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 168:</b> Structural analysis of bone by segmentation and finite elements analysis in patients with osteoporosis  <b>Speaker / Ponente:</b> Jeisson Paternina Baena  <b>Conference Room / Auditorio:</b> Fire room</p>
9:00 – 9:20	<p><b>Oral Presentation ID 123:</b> Mechanical behavior of concrete and mortar reinforced with banana fibers (<i>Musa Paradisiaca</i>) or with commercial polypropylene fibers  <b>Speaker / Ponente:</b> Carlos Eduardo Martínez Suárez  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 71:</b> Analysis of thermal efficiency in a steam generator set by the indirect method  <b>Speaker / Ponente:</b> Edwin Espinel Blanco  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 43:</b> Assessment of the wear and corrosion properties of the Ti<sub>6</sub>Al<sub>4</sub>V alloy manufactured by additive manufacturing with anodized  <b>Speaker / Ponente:</b> Angélica Cely González  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 28:</b> Bose-Fermi mixtures with next-neighbor interactions  <b>Speaker / Ponente:</b> Jereson Silva Valencia  <b>Conference Room / Auditorio:</b> Fire room</p>

9:20 – 9:40	<p><b>Oral Presentation ID 124:</b> Synthesis and characterization of cerium doped lanthanum ferrites  <b>Speaker / Ponente:</b> Juan Manuel Oviedo Cueter  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 51:</b> A simple model to explain the relationship between electromagnetic and acoustic emissions during the fracture of brittle materials  <b>Speaker / Ponente:</b> Jorge Clavijo  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 173:</b> Manufacturing of photoactive beta-bismuth oxide by flame spray oxidation  <b>Speaker / Ponente:</b> Maria Teresa Ayala Ayala  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 08:</b> Implementation of Tite Liner technique for maintenance and rehabilitation of a Colombian oil pipeline  <b>Speaker / Ponente:</b> Yeison Lozano Rodríguez  <b>Conference Room / Auditorio:</b> Fire room</p>
9:40 – 10:00	<p><b>Oral Presentation ID 136:</b> Structure and microstructure behavior of Fe<sup>3+</sup> doped KNN powders  <b>Speaker / Ponente:</b> Sebastián Amaya Zabala  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 44:</b> Design and evaluation of a control system for two-dimensional metric validation of metal screws used in osteosynthesis  <b>Speaker / Ponente:</b> Iván Rodrigo Castillo Cañas  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 177:</b> Study of pressure-temperature characteristics in nitriding processes with plasma  <b>Speaker / Ponente:</b> Yensur Harvey Camacho Hernández  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 20:</b> Thermal shock and mechanical strength analysis of glass-ceramic samples obtained from industrial by-products  <b>Speaker / Ponente:</b> Diana Mireya Ayala Valderrama  <b>Conference Room / Auditorio:</b> Fire room</p>
10:00 – 10:20	Coffee / Café

10:20 – 10:40	<p><b>Oral Presentation ID 140:</b> Study of the hydrophobicity of ceramic materials by thermogravimetric</p> <p><b>Speaker / Ponente:</b> Giselle Carolina Barón Gualdrón</p> <p><b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 154:</b> Characterization of ultrasonic signals with "scan A" from induced defectology</p> <p><b>Speaker / Ponente:</b> Yuber Giovanni Lopez Ruiz</p> <p><b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 187:</b> Effect of plasma modification in banana and pineapple fibers on the properties of a polyethylene glycol-fiber material</p> <p><b>Speaker / Ponente:</b> Tatiana Franco Gómez</p> <p><b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 80:</b> Cost comparison between short bridges simply supported with reinforced concrete beams, post-tensioned concrete and structural steel</p> <p><b>Speaker / Ponente:</b> José Ricardo Pineda Rodríguez</p> <p><b>Conference Room / Auditorio:</b> Fire room</p>
10:40 – 11:00	<p><b>Oral Presentation ID 110:</b> Impact of plasticizers on the quality of concrete used in constructions</p> <p><b>Speaker / Ponente:</b> Pedro Antonio Garzón Agudelo</p> <p><b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 52:</b> Micro-crack classification in reinforced concrete walls by parametric analysis of acoustic emissions</p> <p><b>Speaker / Ponente:</b> Jorge Clavijo</p> <p><b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 26:</b> Influence of nickel addition in the vibrational, optical and morphological properties of spinel cobalt oxide nanoparticles</p> <p><b>Speaker / Ponente:</b> Leydi Julieta Cárdenas Flechas</p> <p><b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 141:</b> Procedure to measure thickness in ceramic metallics thin films with atomic force microscopy</p> <p><b>Speaker / Ponente:</b> Carlos Mauricio Villamizar Mora</p> <p><b>Conference Room / Auditorio:</b> Fire room</p>

11:00 – 11:20	<p><b>Oral Presentation ID 142:</b> Kinetic analysis of the main peak of the thermoluminescent glow curve of <math>\alpha</math>-Al<sub>2</sub>O<sub>3</sub>  <b>Speaker / Ponente:</b> Yulissa Carolina Espitia Páez  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 06:</b> Evaluation of mineral oils as matrices for AISI/SAE 1020 steel naphthenic corrosion study  <b>Speaker / Ponente:</b> Gerson Rafael Conde Rodríguez  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 189:</b> Potential recovery of rare earth minerals as by-products of alluvial gold mining in the North-East of Antioquia, Colombia  <b>Speaker / Ponente:</b> Lucia Inés Ochoa Correa  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 111:</b> Valuation of La Laguna dam  <b>Speaker / Ponente:</b> Henry De Jesús Gallardo Pérez  <b>Conference Room / Auditorio:</b> Fire room</p>
11:20 – 11:40	<p><b>Oral Presentation ID 175:</b> Synthesis, characterization, and temporal evaluation of the concentration of silver nanoparticles  <b>Speaker / Ponente:</b> Hilda Angélica Padilla Sierra  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 163:</b> Functional analysis in the design and development of an accessory dedicated to the handling of smart phones and its influence on carpian tunnel syndrome  <b>Speaker / Ponente:</b> Miguel Angel Niño Ardila  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 39:</b> Characterization and preliminary tests of Colombian sands with potential of use in fracking  <b>Speaker / Ponente:</b> Walter Pardavé  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 74:</b> Welding process selection, state of art: review and perspectives  <b>Speaker / Ponente:</b> Oscar Rodolfo Bohorquez Becerra  <b>Conference Room / Auditorio:</b> Fire room</p>

11:40 – 12:00	<p><b>Oral Presentation ID 139:</b> BiFeO<sub>3-(1-x)</sub>BaTiO<sub>3</sub> around the morphotropic phase boundary  <b>Speaker / Ponente:</b> Sebastián Amaya Zabala  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 166:</b> Social interest housing model through the use of recycled materials: sustainable development under construction  <b>Speaker / Ponente:</b> Alejandro David Martínez Amariz  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 47:</b> Analysis of techniques to deposit an antibiotic film on an implantable cardiovascular electronic device exposed to Staphylococcus Aureus strains  <b>Speaker / Ponente:</b> Yeison Lozano Rodríguez  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 61:</b> Teaching renewable energy in secondary basic education using solar cells  <b>Speaker / Ponente:</b> Clara Lilia Calderón Triana  <b>Conference Room / Auditorio:</b> Fire room</p>
12:00 – 14:00	Lunch Break / Almuerzo



DAY DÍA	FRIDAY AFTERNOON / VIERNES TARDE	
HOUR HORA		
14:00 – 14:20	<p><b>Oral Presentation ID 63:</b> In-plane behavior of H10 clay blocks externally reinforced with electrowelded mesh  <b>Speaker / Ponente:</b> Nelson Afanador García  <b>Conference Room / Auditorio:</b> Earth room</p>	
	<p><b>Oral Presentation ID 76:</b> Meaningful learning through the design process of an electric arc welding mechanized application system  <b>Speaker / Ponente:</b> Juan Alejandro Acevedo Osma  <b>Conference Room / Auditorio:</b> Air room</p>	
	<p><b>Oral Presentation ID 50:</b> Effect of diffuse scattering due to materials surface on millimeter wave propagation  <b>Speaker / Ponente:</b> Jorge Gómez Rojas  <b>Conference Room / Auditorio:</b> Water room</p>	
	<p><b>Oral Presentation ID 183:</b> Correlation between tensile strength and hardness in welded joints  <b>Speaker / Ponente:</b> Luis Mario Calderón Vergel  <b>Conference Room / Auditorio:</b> Fire room</p>	
14:20 – 14:40	<p><b>Oral Presentation ID 186:</b> Raman-based technique for measuring thermal conductivity of coals Colombian  <b>Speaker / Ponente:</b> James Janderson Rosero Romo  <b>Conference Room / Auditorio:</b> Earth room</p>	
	<p><b>Oral Presentation ID 97:</b> Data analysis to detect learning styles in university student  <b>Speaker / Ponente:</b> Torcoroma Velásquez Pérez  <b>Conference Room / Auditorio:</b> Air room</p>	
	<p><b>Oral Presentation ID 81:</b> Photocatalytic degradation of blue fabric dye using strontium aluminate doped with europium and dysprosium  <b>Speaker / Ponente:</b> Yesica Milena Rolón Rodríguez  <b>Conference Room / Auditorio:</b> Water room</p>	
	<p><b>Oral Presentation ID 64:</b> Aluminum smelting by generating electromagnetic waves by microwave oven  <b>Speaker / Ponente:</b> Naren Yesith Perez Rangel  <b>Conference Room / Auditorio:</b> Fire room</p>	

14:40 – 15:00	<p><b>Oral Presentation ID 144:</b> Analysis on the theory of artificial intelligence based on bibliometrics and social network analysis  <b>Speaker / Ponente:</b> Efren Romero Riaño  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 152:</b> Analysis of statistical indicators to evaluate soccer players in the youth category  <b>Speaker / Ponente:</b> Yener Adrian Ramirez Ortiz  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 94:</b> Analysis of the safety and deflection factor of an automatic destressing prototype in cattle  <b>Speaker / Ponente:</b> José Humberto Arévalo Ruedas  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 70:</b> Application of security factors in the design of geotechnical structures: challenges for academic teaching  <b>Speaker / Ponente:</b> Juan Carlos Ruge  <b>Conference Room / Auditorio:</b> Fire room</p>
15:00 – 15:20	<p><b>Oral Presentation ID 99:</b> Disability and labor insertion: the new challenge for emerging technologies  <b>Speaker / Ponente:</b> María Alejandra Arrieta Sánchez  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 122:</b> Development of a mechanical cushioning system for palmiste loading equipment for a company in the department of Cesar, Colombia  <b>Speaker / Ponente:</b> Eder Norberto Florez Solano  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 162:</b> Roadmap for digital transformation incorporation  <b>Speaker / Ponente:</b> Milton Jesús Vera Contreras  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 164:</b> On the use of seawater and ferric chloride as coagulants of domestic effluents  <b>Speaker / Ponente:</b> Diana Cegarra  <b>Conference Room / Auditorio:</b> Fire room</p>

<b>15:20 – 15:40</b>	<p><b>Oral Presentation ID 145:</b> Usability testing in support decision systems: an internet of things case study  <b>Speaker / Ponente:</b> Efren Romero Riaño  <b>Conference Room / Auditorio:</b> Earth room</p>
	<p><b>Oral Presentation ID 157:</b> Statistical evaluation of some technical and tactical actions of the game in futsal  <b>Speaker / Ponente:</b> Yener Adrian Ramirez Ortiz  <b>Conference Room / Auditorio:</b> Air room</p>
	<p><b>Oral Presentation ID 179:</b> Optimization of management systems in electric power transmission processes  <b>Speaker / Ponente:</b> Oscar Julian Horta Gómez  <b>Conference Room / Auditorio:</b> Water room</p>
	<p><b>Oral Presentation ID 103:</b> Mechanical properties of an anti-wear coating for use in oil pipes  <b>Speaker / Ponente:</b> Alberto David Pertuz Comas  <b>Conference Room / Auditorio:</b> Fire room</p>
<b>15:40 – 16:00</b>	<p><b>Closing Ceremony: 5+1 INTERNATIONAL MEETING FOR RESEARCHERS IN MATERIALS &amp; PLASMA TECHNOLOGY (5+1 IMRMPT)</b>   <b>Conference Room / Auditorio:</b> Earth room</p>



INTERNATIONAL MEETING FOR RESEARCHERS IN  
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