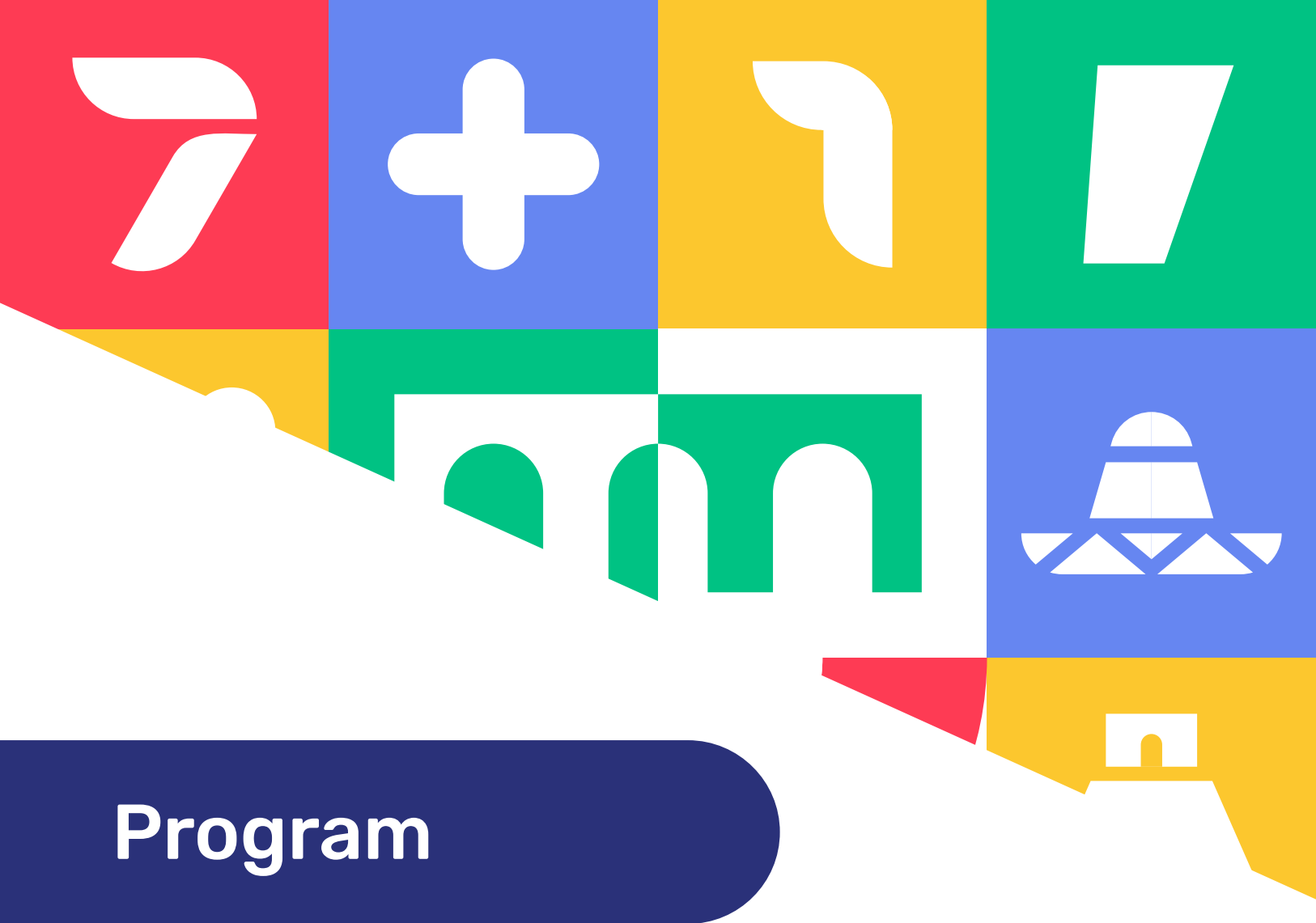




International Meeting for Researchers in Materials and Plasma Technology



IMRMPT
Querétaro
México, 2025



Foristom
Foundation



International Meeting for
Researchers in Materials
and Plasma Technology
Querétaro, Mexico, 2025



Juan Muñoz Saldaña

Chairman 7th IMRMPT

Ely Dannier V. Niño

Editor, Layout Coordinator

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Invited Speakers

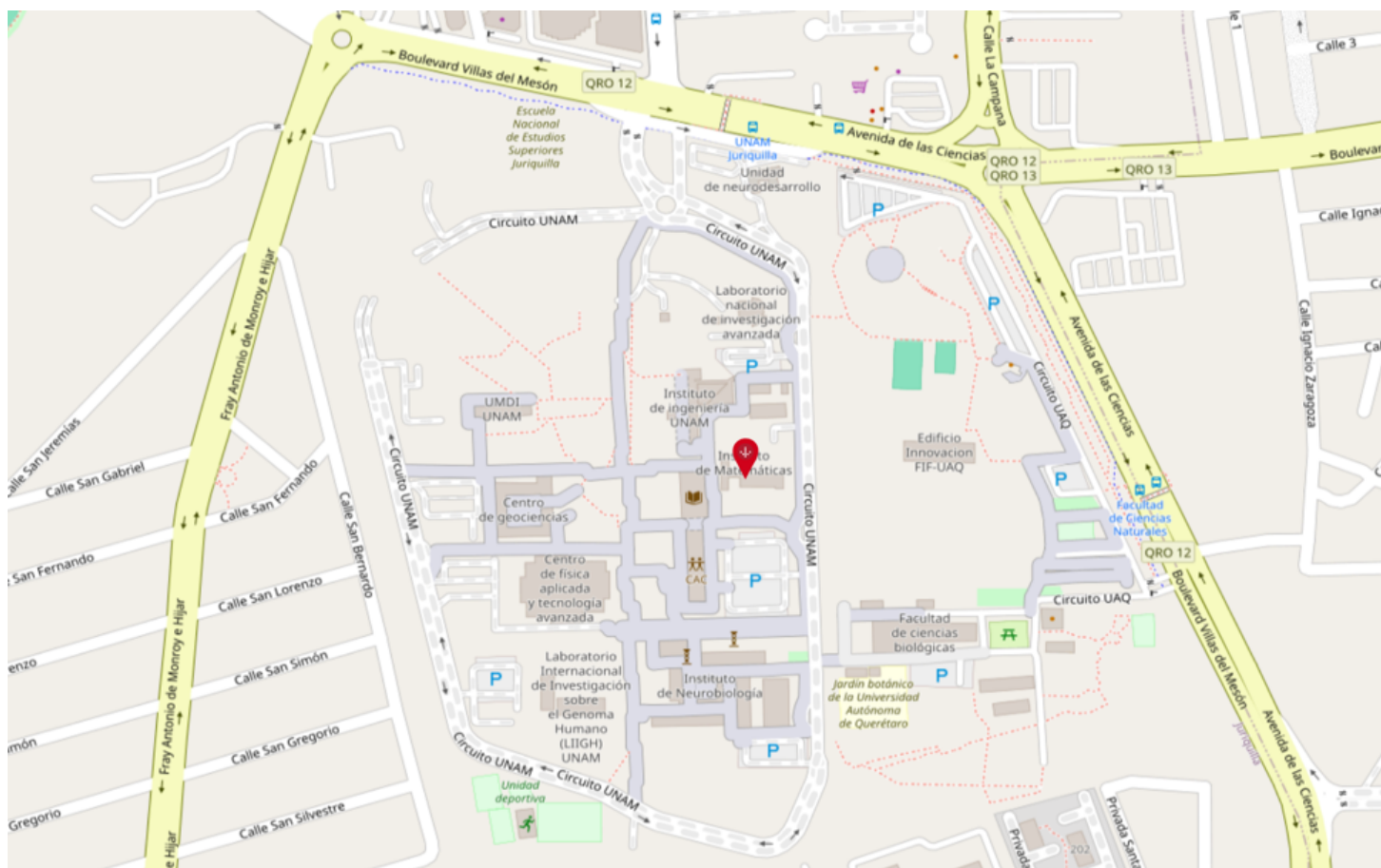
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CONFERENCE VENUE

Universidad Nacional Autónoma de México, campus Juriquilla

The Juriquilla Campus of the National Autonomous University of Mexico (UNAM) is located in Juriquilla town, Querétaro, Mexico; the academic and scientific centers and institutes house some undergraduate and graduate study programs oriented to natural sciences and engineering. The campus contains common spaces (administrative building, library, auditorium, sports areas) and buildings of various UNAM centers and institutes; the Academic Cultural Center (auditorium “Flavio Mena Jara,” home of the 7+1 IMRMPT, is routinely visited by external audiences due to the extensive and continuous cultural programming.





CONFERENCE ROOM

Wednesday, April 09, 2025

Auditorium Doctor Flavio Mena Jara

Los Arcos

Corregidora

Bernal

Sierra Gorda

Tequisquiapan

Thursday, April 10, 2025

Auditorium Doctor Flavio Mena Jara

Los Arcos

Corregidora

Bernal

Sierra Gorda

Tequisquiapan

Friday, April 11, 2025

Auditorium Doctor Flavio Mena Jara

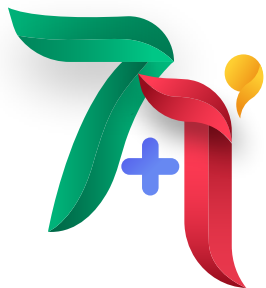
Los Arcos

Corregidora

Bernal

Sierra Gorda

Tequisquiapan



International Meeting for Researchers in Materials and Plasma Technology

Querétaro, Mexico, 2025

Topics

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





PROGRAM

7+1' IMRMPT



SECOND DAY

April 10, 2025

DAY HOUR	THURSDAY MORNING
9:00 – 9:20	Oral Presentation ID 155: Development of a prosthetic foot manufactured by additive manufacturing Speaker: Marina Leonor Picazo Meza Conference Room: Los Arcos
	Oral Presentation ID 56: Symmetrical current distribution in a superconducting strip Speaker: Jose Jose Barba Ortega Conference Room: Corregidora
	Oral Presentation ID 137: Effect of low-pressure carburizing on the microstructure, scratch resistance, and corrosion behavior of 17-4PH stainless steel fabricated by conventional and additive manufacturing Speaker: Luis Miguel Ballesteros Conference Room: Bernal
	Oral Presentation ID 149: Enhancing interfacial and rheological performance of nanocellulose for advanced oil recovery applications Speaker: Jimena Gomez Conference Room: Sierra Gorda
	Oral Presentation ID 48: Influence of Bi/Ti ratio on the synthesis of heterojunctions by solid State reaction and their photocatalytic performance in the degradation of pollutants present in water Speaker: Jhon Sebastián Pérez Bedoya Conference Room: Tequisquiapan
9:20 – 9:40	Oral Presentation ID 159: Performance of bovine-derived hydroxyapatite (BHAp) powder employed in the fabrication of HVOF coatings for biomedical applications Speaker: Juanita Hincapie Bedoya Conference Room: Los Arcos
	Oral Presentation ID 26: Photodeposited gold nanoparticles: morphological and molecular changes under thermal stress with experimental and simulated approaches Speaker: Luz Rebeca Gutiérrez Mendoza Conference Room: Corregidora
	Oral Presentation ID 59: Newton-Raphson-based approach for solving complex rayleigh-lamb equations in viscoelastic materials Speaker: Jabid Quiroga Conference Room: Bernal
	Oral Presentation ID 74: Impact of research lines on institutional strengthening and social transformation: case study of I.U. Pascual Bravo Speaker: Erica Mejia Conference Room: Sierra Gorda
	Oral Presentation ID 75: Bi ₁₂ TiO ₂₀ ceramics synthesized by solid state reaction for photocatalytic applications: effect of heat treatment parameters Speaker: Anyi Ramirez Muñoz Conference Room: Tequisquiapan



9:40 – 10:00	Oral Presentation ID 99: In vitro cell response and bioactivity in NBT-KBT piezoceramics: I) Unpoled case Speaker: Angelica Maria Benitez Castro Conference Room: Los Arcos
	Oral Presentation ID 103: Studied ferroelectric properties of BiFeO ₃ thin films doped with Nd using resonance PFM Speaker: José Martin Yáñez Limón Conference Room: Corregidora
	Oral Presentation ID 53: Thermal treatment of coke fine powders using oxyacetylene oxidizing atmosphere Speaker: Gabriel Peña Rodriguez Conference Room: Bernal
	Oral Presentation ID 153: Valorization of rice husk for additive manufacturing applications Speaker: Luz Adriana Sanchez Echeverri Conference Room: Sierra Gorda
	Oral Presentation ID 189: Technological perspectives of mechanical nanogenerators in energy harvesting: materials and applications Speaker: Brandon Gonzalez Conference Room: Tequisquiapan
10:00 – 10:20	Coffee Break
10:20 – 11:20	Plenary Lecture III: Biomaterials in medicine: from the laboratory to the hospital Keynote Speaker: Juan Manuel Alvarado Orozco Conference Room: Auditorium Doctor Flavio Mena Jara
11:20 – 12:00	Oral Presentation ID 177: Compounds based on nanohydroxyapatite for biomedical and environmental applications Keynote Speaker: Dorian Fernanda Canon Dávila Conference Room: Los Arcos
	Oral Presentation ID 185: Synthesis and properties of Indium and Chlorine-based ternary 2D materials Keynote Speaker: Andres De Luna Bugallo Conference Room: Corregidora
	Oral Presentation ID 186: nondestructive characterization of 304 stainless steel and zircaloy-4 using linear and nonlinear ultrasound Keynote Speaker: Alberto Ruiz Marines Conference Room: Bernal
	Oral Presentation ID 64: Surface Nitriding of quartz using a RF Plasma Keynote Speaker: Stephen Muhl Conference Room: Sierra Gorda
	Oral Presentation ID 205: Exploration of Novel Photo-Sono-Assisted Processes for Wastewater Treatment Speaker: Luis Arturo Godínez Mora-Tovar Conference Room: Tequisquiapan
12:00 – 12:40	Oral Presentation ID 109: Novel process for depositing calcium phosphates/(Na _{0.5} Bi _{0.5})TiO ₃ ceramic composite coatings by HVOF thermal spraying Keynote Speaker: Aixa Ibeth Gutiérrez Pérez Conference Room: Los Arcos



	Oral Presentation ID 154: (Bio)Sensors based on nanophotonic phenomena Keynote Speaker: Eden Morales-Narvaez Conference Room: Corregidora
	Oral Presentation ID 0: Keynote Speaker: Conference Room: Bernal
	Oral Presentation ID 199: Additive manufacturing for low-volume injection molding: a case study Keynote Speaker: David Andrés Fernández Benavides Conference Room: Sierra Gorda
	Oral Presentation ID 195: Heterogeneous catalysts in energy-environmental applications from a circular economy perspective Keynote Speaker: Issis Romero Conference Room: Tequisquiapan
12:40 – 13:00	Oral Presentation ID 123: Characterization and bioactivity evaluation of SiO ₂ -CaO-P ₂ O ₅ glass composition: structural, microstructural, and cellular response insights Speaker: Francisco Javier Romero Argote Conference Room: Los Arcos
	Oral Presentation ID 117: Study the photosensitive properties of BiFeO ₃ films doped with La and Mn obtained by sol-gel method Speaker: José Martín Yáñez Limón Conference Room: Corregidora
	Oral Presentation ID 166: Structural characterization of the A356 alloy as cast by the counter pressure casting process Speaker: Jonathan Ordaz Conference Room: Bernal
	Oral Presentation ID 104: Processing and characterization of a hybrid cement based on diatomaceous earth and alkaline activated calcium carbonate Speaker: Maria Fernanda Maldonado Conference Room: Sierra Gorda
	Oral Presentation ID 197: Photocatalytic visible-light active multi-heterojunctions insitu synthesized by flame spray Speaker: Maria Teresa Ayala Ayala Conference Room: Tequisquiapan
13:00 – 15:00	Lunch Break



DAY HOUR	THURSDAY AFTERNOON
15:00 – 16:00	Plenary Lecture IV: PVD coatings for biomedical applications Keynote Speaker: Sandra Rodil Conference Room: Auditorium Doctor Flavio Mena Jara
16:00 – 16:20	Oral Presentation ID 57: Manufacturing of thermally sprayed hydroxyapatite-bioactive glass/hydroxyapatite/titanium dioxide coatings on PEEK substrates Speaker: Benjamin Ortega Bautista Conference Room: Los Arcos
	Oral Presentation ID 176: Study of optical and thermal properties of multilayer systems based on porous silicon Speaker: Porfirio Esaú Martínez Muñoz Conference Room: Corregidora
	Oral Presentation ID 184: "In situ" metallographic evaluation assisted by an integrated compendium of chemical and microstructural characterization of metallic materials Speaker: Daniel Angeles Herrera Conference Room: Bernal
	Oral Presentation ID 201: Modification of the oxidation temperature of cathodic arc-deposited TiAlN coatings through doping with oxygen and niobium Speaker: Juan Manuel Gonzalez Carmona Conference Room: Sierra Gorda
	Oral Presentation ID 129: Electrocatalytic Activity of BiVO ₄ : A Bulk Cell Electrochemical Study for oxidation of methylene blue Speaker: Arlete Yuriana Vázquez García Conference Room: Tequisquiapan
16:20 – 16:40	Oral Presentation ID 100: Development of collagen-based aerogel for application in bone grafts Speaker: Andrés José Flórez Carrillo Conference Room: Los Arcos
	Oral Presentation ID 31: Cold plasma oligomerization of a sustainable monoterpenoid: formation and characterization Speaker: Luis Pablo Canul Solis Conference Room: Corregidora
	Oral Presentation ID 27: Recycled polystyrene and reduced graphene oxide as a protective coating for metals Speaker: Victoria Moreno Saavedra Conference Room: Bernal
	Oral Presentation ID 80: Advancements in electromagnetic heating simulation with nanoparticles for enhanced oil recovery: addressing challenges and exploring innovations Speaker: Paola Leon Conference Room: Sierra Gorda
	Oral Presentation ID 12: Efficient bifunctional photocatalysts of two-dimensional materials for water splitting Speaker: Mourad Boujnah Conference Room: Tequisquiapan



16:40 – 17:00	Oral Presentation ID 127: Development and characterization of 3D type I collagen hydrogels with microspheres to study traction forces in cancer cells Speaker: Laura Rodríguez Mandujano Conference Room: Los Arcos
	Oral Presentation ID 178: Determination of the thermo-electronic and structural properties of polycrystalline metals and single-crystal semiconductors Speaker: Porfirio Esaú Martínez Muñoz Conference Room: Corregidora
	Oral Presentation ID 157: Alkali activation of tailings with metakaolin additions for the development of cementitious materials Speaker: Mario David Sanchez Ruiz Conference Room: Bernal
	Oral Presentation ID 67: C, Si, and Ge sputtering yield amplification, SYA, study doped with W, Cu, Ta, or Mo Speaker: Julio César Cruz Cárdenas Conference Room: Sierra Gorda
	Oral Presentation ID 134: Mechanical alloy of Al+M1+M2 (M1= Fe, Ni, Cu, Zn AND M2= Ga, Li and C) for the generation of hydrogen for possible mobile applications from water Speaker: Josue Blancas Conference Room: Tequisquiapan
17:00 – 17:20	Oral Presentation ID 93: Mechanical properties, biodegradability and drug release of polymeric hydrogels containing microspheres with acetaminophen Speaker: Cristina Yuritzi Velázquez González Conference Room: Los Arcos
	Oral Presentation ID 111: Effect of diatomite as a partial replacement in an alkaline activated material based on calcium carbonate Speaker: Isaí Bustos Urtiz Conference Room: Corregidora
	Oral Presentation ID 73: Correcting acidity of a mining-degraded soil and an agricultural soil with concrete waste Speaker: Erica Mejia Conference Room: Bernal
	Oral Presentation ID 196: Advances in coronary stent design: integration of prototyping technologies and computational modeling in lattice structures Speaker: Julian Pinilla Conference Room: Sierra Gorda
17:20 – 17:40	Oral Presentation ID 92: Innovation in hydrogen transport: evaluation of graphene oxide reinforced HDPE pipelines Speaker: Elcy Mariana Pérez Rodríguez Conference Room: Tequisquiapan
	Oral Presentation ID 128: Influence of F/O ratio on the structural, microstructural properties and in vitro performance of bovine-derived hydroxyapatite coatings produced by flame spray Speaker: Jhan Danilo Salazar Martínez Conference Room: Los Arcos



	Oral Presentation ID 25: Optimization of productivity and water consumption in Carica papaya cultivation through the implementation of an automated irrigation system Speaker: Hernán Sánchez Conference Room: Corregidora
	Oral Presentation ID 203: Development of ceramic coating on carbon-carbon material for use in supersonic nozzle Speaker: Omar Aconeltzin Jiménez Arévalo Conference Room: Bernal
	Oral Presentation ID 18: Eco-friendly gold extraction from discarded computer processors and its application in nanocatalyst synthesis Speaker: Verónica Arellano Cerda Conference Room: Sierra Gorda
	Oral Presentation ID 138: Development of a dual integrated system with Stirling engine, PCM, parabolic solar collector and lithium bromide absorption cooling in arid zones Speaker: Martha Johanna Rueda Caballero Conference Room: Tequisquiapan
17:40 – 18:00	Coffee Break
18:00 – 19:00	Poster Section
19:00 – 21:00	Meeting: Network of Researchers in Materials Science, Engineering, and Nanotechnology Speaker: Juan Muñoz Saldaña, and Ely Dannier V. Niño Conference Room: Pinal de Amoles



POSTER PRESENTATION

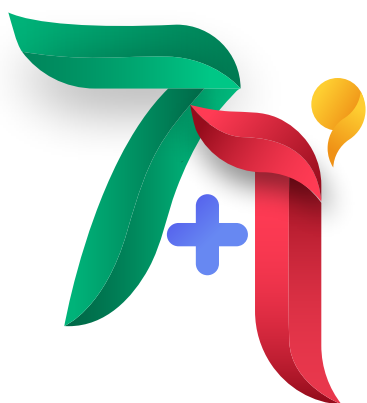
ID	THURSDAY AFTERNOON
19	Presentation: High-cycle fatigue testing for a continuous fiber-reinforced polymer matrix composite manufactured by 3D printing Speaker: Jorge Guillermo Diaz Rodríguez
37	Presentation: Evaluation of ZnMoO ₄ nanostructures as a function of Zn and Mo concentration for obtaining thick films Speaker: Jesús Francisco Acosta Palacios
47	Presentation: Chemical synthesis of magnesium aluminate spinel powders by combustion method Speaker: Angelica Mauro Nolasco
61	Presentation: WAAM part creation mechanical characterization with low carbon steel and interlayer mechanical influence Speaker: Fernando Alain Romero Coppe
62	Presentation: Synthesis and characterization of silver nanoparticles by the cavitation method Speaker: Hugo Hinojosa
69	Presentation: Instrumentation and electrical characterization of a PbS thermal sensor Speaker: Diego Alonso Zamora Camacho
72	Presentation: Spot tests analysis as a function of stand off distances of IN625 superalloys deposited by HVOF Speaker: Emily del Carmen Herrera Lucido
77	Presentation: Thermoluminescent response of rare earth-doped strontium zirconate synthesized by reverse coprecipitation Speaker: Julián Mendoza
79	Presentation: Design and simulation of piezoelectric transducer and acoustic horn for ultrasonic welding Speaker: Omar García Hernández
85	Presentation: Fatigue behavior of ASTM A572 steel in welds Speaker: Jose Luis Herrera Arizmendi
89	Presentation: Solvothermal synthesis of iron oxides deposited as films on silicon substrates for use in supercapacitors. Speaker: Karina Chávez
96	Presentation: Tribological and mechanical performance of copper and aluminum nanocomposites Speaker: Ana Arizmendi
98	Presentation: Design and chemical fabrication of a semiconductor temperature sensor Speaker: Mónica Balvanera Ortuño López
106	Presentation: Laser metal deposition of Fe-based composite coatings: a comparative study of continuous- and pulsed-wave laser Speaker: Norma Andrea Montalvo Muñoz
107	Presentation: Pulsed Nd: YAG laser cladding of Fe-based metallic glass coatings Speaker: Dulce María Román Hernández
108	Presentation: Three-dimensional characterization of diatomite-limestone cements using micro-computed tomography Speaker: Isaí Bustos Urtiz
110	Presentation: Effect of strain rate on the mechanical properties of a TRIP400Y690T steel Speaker: Mauricio Eliaquin Angulo Javier



113	Presentation: Mechanical characterization of dissimilar joints of 2205-304 stainless steel made with the cmt welding process Speaker: Luis Angel Atonal Carrasco
115	Presentation: Effect of co-doping with Mn and Nb of BaTiO ₃ on its microstructural, optical and ferroelectric properties Speaker: Jesús Iván Peña Flores
118	Presentation: Thermoreversible shape memory polymeric nanocrystals Speaker: Bonifacio Alvarado Tenorio
124	Presentation: Microstructure and mechanical properties of oxynitrided Ti-6Al-4V water collected in-flight particles from twin wire arc spraying Speaker: Mauricio Nango
132	Presentation: Direct energy deposition of MMNC IN718-Al ₂ O ₃ obtained by powder milling Speaker: Enrique Martinez Franco
133	Presentation: Immersion effect of aqueous H ₂ O ₂ solutions on bleaching of fique and pineapple fibers at pilot scale and their mechanical properties influence Speaker: German Adolfo Díaz-Ramírez
136	Presentation: Tribological performance of 17-4 PH stainless steel coatings fabricated by additive manufacturing: an experimental design approach Speaker: Luis Miguel Ballesteros
152	Presentation: Comparison of equivalent stress intensity factor models for mixed mode fracture I and II Speaker: Estefanía Gómez
158	Presentation: Numerical analysis of the thermal performance of a Therminol VP-1 based nanofluid using computational fluid dynamics in a test rig system Speaker: Ely Dannier V. Niño
167	Presentation: Optimization strategies for thermal spray processes Speaker: Víctor Dahián Saldarriaga Montoya
169	Presentation: Deposition of wear-resistant nickel-based coatings by high-speed air combustion processes for power generation turbines Speaker: Nestor Giovanny Yomayaza Sierra
170	Presentation: Mechanically induced damaged surface layer and its thermal stability in polycrystalline NBT-6BT ceramics Speaker: Angelica Maria Benitez Castro
171	Presentation: Study on the applicability of the activated combustion - high velocity air fuel thermal spray process in reconstructive manufacturing applications of metal components Speaker: Sergio Daniel Rodriguez Arevalo
172	Presentation: Quantum tribology of advanced nitride-coated cutting tools operating at the edge of chaos Speaker: Ely Dannier V. Niño
173	Presentation: Breath analysis using surface-enhanced raman spectroscopy Speaker: Ivan Alonso Lujan Cabrera
200	Presentation: Synthesis, optical and structural properties of 2D semiconductors based on tin and sulfur Speaker: Sofia Peña Santamaria
209	Presentation: Discovery of carbon nanostructures in a mineral: analysis using spectroscopy and microscopy techniques Speaker: Alexis Martínez Silva



212	Presentation: The reactive extrusion cationization of starches as a novel physicochemical surface modification method Speaker: María Camila Posada Vélez
213	Presentation: Methodology for obtaining and characterizing chitin from the exuviae of Tenebrio molitor Speaker: Laura Aline Modesto Campa
214	Presentation: Physico-chemical study of chitin extracted from the imago phase of tenebrio mollitor Speaker: Georgina Torres Infante



International Meeting for Researchers in Materials and Plasma Technology

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