

# Programme

## Workshop on Modeling and Simulation for Science and Engineering

July 25 - 26, 2022  
Bogotá, Colombia



**Foristom**  
Foundation

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Universidad Católica del Maule, Talca, Chile

## Invited Speakers

- ✓ Dr. José Luis Endrino  
Universidad Loyola, Spain
- ✓ Dr. Iván Fernández Martínez  
Nano4Energy, Spain
- ✓ Dr. Juan Muñoz Saldaña  
Laboratorio Nacional de Proyección, Mexico
- ✓ Dr. Mariana Pereyra Perez  
Universidad de la República, Uruguay
- ✓ Dr. Eduardo Daniel Méndez Morales  
Universidad de la República, Uruguay
- ✓ Claudinei de Souza Guimaraes  
Universidade Federal do Rio de Janeiro, Brazil

## Conference Room

<b>Monday, July 25, 2022</b>	<u><a href="#">Principal room</a></u>
<b>Tuesday, July 26, 2022</b>	<u><a href="#">Principal room</a></u>

# Topics

- **Computer Science**
- **Mechatronic Systems**
- **Dynamic Systems Modeling**
- **Physical-Chemistry Modeling**
- **Physics-Mathematical Modeling**
- **Modeling, Simulation, and Diagnostics**
- **Education on Science, Engineering, and Technology**



***PROGRAM***

**V WMSSE**



## FIRST DAY

July 25, 2022

DAY HOUR	MONDAY MORNING
8:20 – 8:40	<b>Opening Ceremony:</b> V Workshop on Modeling and Simulation for Science and Engineering (V WMSSE) <b>Conference Room:</b> Principal room
8:40 – 9:00	<b>Oral On-Site Presentation ID 10:</b> Application of a comprehensive methodology for the development of personalized bone implants: exemplification through three cases <b>Speaker:</b> Freddy Patricio Moncayo Matute <b>Conference Room:</b> Principal room <b>Conference Room:</b> Principal room
9:00 – 9:20	<b>Oral On-Site Presentation ID 15:</b> Numerical optimization of the solution of the Ginzburg-Landau equations: Crank-Nicholson and matricials methods <b>Speaker:</b> José José Barba Ortega <b>Conference Room:</b> Principal room
9:20 – 9:40	<b>Oral On-Site Presentation ID 40:</b> Elaboration and physical-computational study of a glow discharge device <b>Speaker:</b> Yerson Barragan Jimenez <b>Conference Room:</b> Principal room
9:40 – 10:00	<b>Oral On-Site Presentation ID 46:</b> Experimental and numerical analysis of the thickness distribution in the high impact polystyrene thermoforming process <b>Speaker:</b> César A. Paltán
10:00 – 10:30	<b>Coffee Break / Café</b>
10:30 – 11:00	<b>Plenary Lecture I:</b> Color spaces in sensor design: a physiological-based approach <b>Keynote Speaker:</b> Eduardo Méndez Morales <b>Conference Room:</b> Principal room
11:00 – 11:30	<b>Plenary Lecture II:</b> Air quality assessment using a photochemical model: case study <b>Keynote Speaker:</b> Claudinei de Souza Guimarães <b>Conference Room:</b> Principal room
11:30 – 11:50	<b>Oral On-Site Presentation ID 8:</b> Characterization of biotic and agroclimatic variables for the modeling of phytosanitary conditions and measures in agricultural crops <b>Speaker:</b> Tomas Ramirez Guerrero <b>Conference Room:</b> Principal room
11:50 – 12:10	<b>Oral On-Site Presentation ID 12:</b> Nanostructured superconducting materials by chemical methods <b>Speaker:</b> Paula Garces <b>Conference Room:</b> Principal room
12:10 – 12:30	<b>Oral On-Site Presentation ID 30:</b> Chromium removal potential of tannery chromium from filtration in diatomaceous multi-source soils <b>Speaker:</b> Edwin Anaya <b>Conference Room:</b> Principal room
12:30 – 14:00	<b>Lunch Break / Almuerzo</b>

DAY HOUR	MONDAY AFTERNOON
14:00 – 14:20	<b>Oral Virtual Presentation ID 11:</b> Desertion in secondary level and its relationship with the student approval rate: a study of the Colombian case through Python programming language <b>Speaker:</b> Anibal Alviz Meza <b>Conference Room:</b> Principal room
14:20 – 14:40	<b>Oral Virtual Presentation ID 13:</b> Simulation of asphalt pavements for roads with low traffic volumes with materials treated with cement <b>Speaker:</b> Juan Gabriel Bastidas Martínez <b>Conference Room:</b> Principal room
14:40 – 15:00	<b>Oral Virtual Presentation ID 23:</b> Synchronization on computation theory <b>Speaker:</b> Christian Nolasco Serna <b>Conference Room:</b> Principal room
15:00 – 15:20	<b>Oral Virtual Presentation ID 24:</b> Modeling a quasi-passive bipedal walker: when and where to kick? <b>Speaker:</b> Jorge Enrique Clavijo Ramírez <b>Conference Room:</b> Principal room
15:20 – 15:40	<b>Oral Virtual Presentation ID 25:</b> Designing a gamified system for virtual learning environments: a user experience-oriented approach <b>Speaker:</b> Paola Andrea Buitrago Cadavid <b>Conference Room:</b> Principal room
15:40 – 16:00	<b>Oral Virtual Presentation ID 26:</b> Architecture proposal to implement IP multimedia subsystem in voice over NR in a lab scenario <b>Speaker:</b> Gonzalo Medina Ordoñez <b>Conference Room:</b> Principal room
16:00 – 16:30	<b>Coffee Break / Café</b>
16:30 – 16:50	<b>Oral Virtual Presentation ID 17:</b> Log-linear modeling between risk factors and interactions for human papillomavirus infection and papanicolaou smear abnormalities <b>Speaker:</b> Hugo Alexander Torres Mantilla <b>Conference Room:</b> Principal room
16:50 – 17:10	<b>Oral Virtual Presentation ID 20:</b> Clustering and geospatial visualization of innovation indicators in the Servicio Nacional de Aprendizaje, Regional Antioquia, Colombia <b>Speaker:</b> Paola Andrea Buitrago Cadavid <b>Conference Room:</b> Principal room
17:10 – 17:30	<b>Oral Virtual Presentation ID 27:</b> Software defined radio, a perspective from education <b>Speaker:</b> Mario Andrés Ramos Goyes <b>Conference Room:</b> Principal room
17:30 – 17:50	<b>Oral Virtual Presentation ID 33:</b> BiFeO <sub>3</sub> -(1-x)BaTiO <sub>3</sub> system studies around the morphotropic phase boundary <b>Speaker:</b> Juliana Perez Espinoza <b>Conference Room:</b> Principal room
17:50 – 18:10	<b>Oral Virtual Presentation ID 41:</b> Modeling for the interpolation of raster values, in physicochemical parameters, as a vector of points: a study case of Sochagota lake, Boyacá, Colombia <b>Speaker:</b> Álvaro Gómez Martínez <b>Conference Room:</b> Principal room
18:10 – 18:30	<b>Oral Virtual Presentation ID 42:</b> Application of the 4MAT system in the teaching of forensic physics for the trajectory of projectiles <b>Speaker:</b> Janeth Fernandez <b>Conference Room:</b> Principal room
18:30 – 18:50	<b>Oral Virtual Presentation ID 44:</b> Obtaining structural parameters of cerium-doped lanthanum cobaltites from X-ray diffraction pattern modeling <b>Speaker:</b> Juan Manuel Oviedo Cuéter <b>Conference Room:</b> Principal room



## SECOND DAY

July 26, 2022

DAY HOUR	TUESDAY MORNING
8:20 – 8:40	<b>Coffee Break / Café</b>
8:40 – 9:00	<b>Oral On-Site Presentation ID 19:</b> Different morphologies of nanomaterials obtained by the anodizing method <b>Speaker:</b> Miryam Rincón Joya <b>Conference Room:</b> Principal room
9:00 – 9:20	<b>Oral On-Site Presentation ID 21:</b> Numerical solution of Maxwell's equations applied to a toroidal waveguide <b>Speaker:</b> Jonatan Gonzalez <b>Conference Room:</b> Principal room
9:20 – 9:40	<b>Oral On-Site Presentation ID 37:</b> Processing of high speed steel by ion implantation and ion nitriding in a single technological cycle <b>Speaker:</b> Fredy Fabian Parada Becerra <b>Conference Room:</b> Principal room
9:40 – 10:00	<b>Oral On-Site Presentation ID 47:</b> Computational analysis of structure manufactured by means of the steel framing system. Case study: industrial warehouse <b>Speaker:</b> César A. Paltán <b>Conference Room:</b> Principal room
10:00 – 10:30	<b>Coffee Break / Café</b>
10:30 – 11:00	<b>Plenary Lecture III:</b> Ytria-stabilized zirconia thermal barrier coatings deposited by atmospheric plasma spraying: theoretical/experimental analysis of the process <b>Keynote Speaker:</b> Juan Muñoz Saldaña <b>Conference Room:</b> Principal room
11:00 – 11:30	<b>Plenary Lecture IV:</b> Application of high-power impulse magnetron sputtering thin films to enhance the durability of carbon coatings in metallic bipolar plates for hydrogen fuel cells and electrolyzer <b>Keynote Speaker:</b> Ivan Fernandez Martínez <b>Conference Room:</b> Principal room
11:30 – 11:50	<b>Oral On-Site Presentation ID 9:</b> Mechanical analysis for personalized implant for neurocranial protection manufactured with PMMA <b>Speaker:</b> Freddy Patricio Moncayo-Matute <b>Conference Room:</b> Principal room
11:50 – 12:10	<b>Oral On-Site Presentation ID 14:</b> Analysis of mechanical properties of polymeric materials reinforced with natural fibers manufactured by additive manufacturing: a review <b>Speaker:</b> Christian Calero Almeyda <b>Conference Room:</b> Principal room
12:10 – 12:30	<b>Oral On-Site Presentation ID 56:</b> Teaching tools based on research for the transfer of knowledge in the classroom <b>Speaker:</b> Leidy Marcela Dueñas Ramirez <b>Conference Room:</b> Principal room
12:10 – 14:00	<b>Lunch Break / Almuerzo</b>

DAY HOUR	TUESDAY AFTERNOON
14:00 – 14:20	<b>Oral Virtual Presentation ID 50:</b> Evaluation of the abrasive wear rate on metal sheets as a function of the type of mineral used in the processing of ores <b>Speaker:</b> Andres Mauricio Moreno Uribe <b>Conference Room:</b> Principal room
14:20 – 14:40	<b>Oral Virtual Presentation ID 39:</b> Biodegradable starch films reinforced with copper oxide nanoparticles: improving mechanical and ultraviolet-visible barrier radiation properties <b>Speaker:</b> João Otávio Donizette Malafatti <b>Conference Room:</b> Principal room
14:40 – 15:00	<b>Oral Virtual Presentation ID 36:</b> Evaluation of mechanical properties and porosity in ceramic pieces obtained from kaolin tailings <b>Speaker:</b> Tainara Ramos Neves <b>Conference Room:</b> Principal room
15:00 – 15:20	<b>Oral Virtual Presentation ID 35:</b> A mathematical model of the dynamics of the human cellular immune response to SARS-CoV-2 <b>Speaker:</b> Ledyz Cuesta Herrera <b>Conference Room:</b> Principal room
15:20 – 15:40	<b>Oral Virtual Presentation ID 31:</b> Evaluation of the surface modification effect on lamellar double hydroxide for chlorogenic acid adsorption <b>Speaker:</b> Andressa Cristina Nascimento <b>Conference Room:</b> Principal room
15:40 – 16:00	<b>Oral Virtual Presentation ID 22:</b> Effects of flux filling efficiency on flux cored wire composed of recycled titanium chips <b>Speaker:</b> Andres Mauricio Moreno Uribe <b>Conference Room:</b> Principal room
16:00 – 16:30	<b>Coffee Break / Café</b>
16:30 – 16:50	<b>Oral Virtual Presentation ID 28:</b> Simulation of some solar tracking systems as an element to increase the energy received in a photovoltaic generator plane <b>Speaker:</b> Juan Manuel Oviedo Cuéter <b>Conference Room:</b> Principal room
16:50 – 17:10	<b>Oral Virtual Presentation ID 32:</b> A simple non-linear spring-block model to address electric charge generation and electromagnetic emissions in stick-slip processes <b>Speaker:</b> Jorge Enrique Clavijo Ramírez <b>Conference Room:</b> Principal room
17:10 – 17:30	<b>Oral Virtual Presentation ID 34:</b> Physical - mathematical modeling for the design of square footings <b>Speaker:</b> Nelson Afanador García <b>Conference Room:</b> Principal room
17:30 – 17:50	<b>Oral Virtual Presentation ID 38:</b> Analysis of the interaction of ionic-atomic fluxes with the surface of substrates using the SRIM-TRIM software <b>Speaker:</b> Jesus Eduardo López Durán <b>Conference Room:</b> Principal room
17:50 – 18:10	<b>Oral Virtual Presentation ID 43:</b> Cluster analysis for the parameters of quality and contamination of water in the artificial lake of Sochagota, Boyacá, Colombia <b>Speaker:</b> Alvaro Gómez Martínez <b>Conference Room:</b> Principal room
18:10 – 18:30	<b>Plenary Lecture V:</b> Nanostructures in nature as a model for biomimicry and new technologies <b>Keynote Speaker:</b> Mariana Pereyra <b>Conference Room:</b> Principal room

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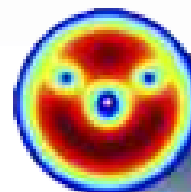
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