



# AGENDA

## SALA 1

**Martes 23** de Julio  
Auditorio Cora Ferro  
Calabrese  
UNA-Heredia

10:00 **ACS on Campus**

12:00

13:00 INSCRIPCIÓN

14:00 **APERTURA**

14:30 PROF. ZEEV GROSS

Faculty of Chemistry, Technion Israel Institute of Technology

**PLENARIA: CATALYST MODIFIED CARBON ELECTRODES FOR RENEWABLE ENERGY RELEVANT PROCESSES**

15:15 Coffee break

15:45 PROF. HÉCTOR VALVIVIA

Professor of Cardiovascular Medicine, University of Wisconsin-Madison

**THAT WICH DOES NOT KILL US, MAKES US STRONGER: THE SALUTARY EFFECT OF SCORPION PEPTIDES ON CALCIUM-DEPENDENT CARDIAC ARRHYTHMIAS**

16:30 PÓSTERES

18:00 ACTIVIDAD SOCIAL

*esencial*  
**COSTA RICA**

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## SALA 1

Miércoles 24 de Julio  
Auditorio Cora Ferro  
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8:00	<b>REGISTRO</b>	13:45	<b>OC38: BELKIS SULBARÁN RANGEL</b> Sorghum stubble as a sustainable source for the production of cellulose nanofibers
8:30	<b>INAUGURACIÓN</b>	14:00	<b>OC05: RICARDO MANRÍQUEZ</b> Cellulose and silica materials with ionic moieties: synthesis, characterization and applications
9:00	<b>PROF. SETH MARDER</b> Chemical & Biological Engineering University of Colorado	14:15	<b>OC29: JORGE CUBERO SESIN</b> Severe plastic deformation as a powerful tool to develop advanced nanomaterials with multifunctional properties
	<b>PLENARIA: INTERFACIAL CHEMISTRY FOR ENERGY AND OPTO-ELECTRONIC APPLICATIONS</b>	14:30	<b>OC35: RENÉ MORA CASAL</b> On the robustness of temperature correction factors for water density, according to API 2555
9:45	<b>COFFEE BREAK</b>	14:45	<b>Magritek:Advances in Benchtop NMR: Applications in Science and Industry</b>
10:15	<b>OC01: MAYNOR VARGAS VARGAS</b> Effects of Low Lanthanide Ion Concentrations on the Germination and Initial Growth of Three Important Vegetable Species in Costa Rica	15:00	<b>PÓSTERES</b>
10:30	<b>OC06: HASBLEIDY PALACIOS</b> Application of cellulose-based materials as water purification filters	15:30	<b>COFFEE BREAK</b>
10:45	<b>OC11: MARIO VILLALOBOS FORBES</b> Methodology Proposal for the Determination of Stable Carbon Isotopic Composition ( $\delta^{13}C$ ) of Total Dissolved Inorganic Carbon (DIC) and Total Nonpurgeable Dissolved Organic Carbon (DOC) in Aqueous Samples Using Coupled NDIR-CRDS System	16:00	<b>OC02: ISAAC CÉSPEDES CAMACHO</b> NMR Hyperpolarization techniques and its application in Costa Rican science
11:00	<b>OC13: JESSICA BADILLO CAMACHO</b> Eggshell and eggshell membranes from different birds as biosorbents for the removal of Cr(VI) from aqueous solutions	16:15	<b>OC08: JAN KERGASSNER</b> From Platinum to Iron: Enhancing Sensitivity through PHIP in Gas Phase NMR
11:15	<b>OC21: EMANUEL MONTEALEGRE VIALES</b> Methodology study for the preliminary estimation of hydrological connectivity in a lacustrine system through the study of groundwater contributions: a case study in the Hule Lake, Costa Rica	16:30	<b>OC07: KARLA HERRERA DELGADO</b> Multi-Scale Modeling of Methanol and Direct Dimethyl Ether Synthesis from CO <sub>2</sub> -rich Syngas
11:30	<b>INBOX: EDXRF una solución rápida y precisa para el análisis de metales pesados en alimentos y productos farmacéuticos</b>	16:45	<b>ACS Publications:Recursos multidisciplinares de Información científica de la American Chemical Society</b>
12:00	<b>ALMUERZO</b>	17:00	<b>IUPAC</b>
13:00	<b>PROF. RAFAEL GÓMEZ</b> Department of Material Science and Engineering, MIT		
	<b>PLENARIA:DESIGNING MATERIALS FOR ENERGY AND SUSTAINABILITY WITH SIMULATIONS AND MACHINE LEARNING</b>		



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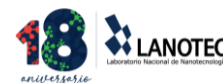
## SALA 2

**Miércoles 24 de Julio**  
Auditorio Cora Ferro  
Calabrese  
UNA-Heredia

- 8:00 REGISTRO**
- 9:45 COFFEE BREAK**
- 10:15 OC17: KATHERINE CHAVES CARBALLO**  
Predict Acidity with PREDIGA
- 10:30 OC09: BETTY GALARRETA**  
Unraveling part of a country's natural history through the chemical characterization of historic botanical watercolors
- 10:45 OC27: MANUEL SANDOVAL BARRANTES**  
Bringing curriculum up to speed: addressing Costa Rican industry needs through a redesigned Industrial Chemistry Undergraduate program
- 11:00 OC42: EDWIN SALAS GONZÁLEZ**  
Exploring the Impact of Scientific Camps on STEM Education: Insights from the Costa Rican Chemistry Olympiad as outreach activities
- 11:15 OC54: CARLOS ARIAS ÁLVAREZ**  
Gamification in the Organic Laboratory as an Answer for Apathy and Pandemia. Going Full Circle
- 11:30 OC48: GUY LAMOUREAUX**  
Neither Explanation nor Prediction is Required for Known Molecular Structures!
- 12:00 ALMUERZO**
- 13:45 OC12: ANDREA IRIAS MATA**  
Innovative research on mycotoxins in grains from Costa Rica to guarantee quality for human consumption: Research Center for Seeds and Grains of University of Costa Rica
- 14:00 OC32: RICARDO QUESADA GROSSO**  
Nanoencapsulation of phenolic extract from apple cashew (*Anacardium occidentale*) to reduce the number of mycotoxins of *Aspergillus flavus*
- 14:15 OC14: KELVIN ARCE VILLALOBOS**  
Mycotoxin's control: Costa Rican common beans' polyphenols as a strong tool for food safety
- 14:30 OC30: MILENA JIMÉNEZ GUTIÉRREZ**  
Effect of simulated gastrointestinal digestion on (poly)phenols and bioactivity of *Coffea arabica* L. by-products from industrial processing
- 14:45 OC03: ORLANDO ARMIJO MONTES**  
Physicochemical, functional, and sensorial characterization of a dietary fiber from the byproduct of peach palm heart processing (*Bactris gasipaes*)
- 15:30 COFFEE BREAK**
- 16:00 OC46: SEBASTIÁN ORIAS RODRÍGUEZ**  
Analysis of alternatives for Producing Synthetic Fuels at the Miravalles Geothermal Station
- 16:15 OC52: CARLOS VEGA AGUILAR**  
Costa Rican biomasses as feedstock for organosolv lignin
- 16:30 OC10: BETTY GALARRETA**  
Developing an aptameric plasmonic nanoplatfor for detecting mycotoxins in food grains
- 16:45 OC47: SERGIO A. PANIAGUA**  
Nanoscale patterns, tailored surfaces, and carbon quantum dots: current efforts for new approaches in the biomedical field and beyond



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## SALA 1

**Viernes 26 de Julio**  
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| <p><b>8:30</b> <b>Dr. ORLANDO ROJAS</b><br/>Department of Chemistry, The University of British Columbia</p> <p><b>PLENARIA: RENEWABLE PARTICLES TO ADVANCE GREEN NANOTECHNOLOGIES</b></p> <p><b>9:15</b> <b>Dra. MARIA JOSE HERNIAZ</b><br/>Vicedecana de Relaciones Internacionales e Investigación de la Facultad de Farmacia. Universidad Complutense de Madrid, Presidenta de la Sociedad Española de Biotecnología</p> <p><b>ADVANCING BIOCATALYTIC AND SUSTAINABLE APPROACHES FOR THE SYNTHESIS OF ANTI-INFECTIVE GLYCOCONJUGATES</b></p> <p><b>10:00</b> <b>COFFEE BREAK</b></p> <p><b>10:30</b> <b>OC45: ROLANDO SÁNCHEZ GUTIÉRREZ</b><br/>Groundwater characterization and recharge processes in a tropical volcanic aquifer using hydrogeochemical and isotope data</p> <p><b>10:45</b> <b>OC26: GÉNESIS CHAVARRÍA</b><br/>Development of a high-performance thin-layer chromatography (HPTLC) method for the simple and rapid identification and quantification of soyasaponin compounds</p> <p><b>11:00</b> <b>OC40: ROCÍO ALFARO</b><br/>Analytical methods: first line of defense against adulteration in honey</p> <p><b>11:15</b> <b>OC53: TONY VARGAS</b><br/>Development, optimization, and validation of an analytical High Performance Liquid Chromatography method for the quantification of Chlorpheniramine maleate in oral solutions</p> <p><b>11:30</b> <b>JEOL-G&amp;H STEINVORTH: Instrumentación para la ciencia</b></p> | <p><b>12:00</b> <b>ALMUERZO</b></p> <p><b>13:00</b> <b>Dra. GISELLE SANDÍ TAPIA</b><br/>Idaho National Laboratory</p> <p><b>PLENARIA: RECHARGEABLE LITHIUM BATTERIES: FUNDAMENTAL RESEARCH TO FIND HIGH-PERFORMANCE MATERIALS</b></p> <p><b>13:45</b> <b>OC19: MARIBEL ZÚÑIGA SOLIS</b><br/>Atmospheric parameters as corrosion estimators</p> <p><b>14:00</b> <b>OC23: LIGIA SOLÍS TORRES</b><br/>Design of a Chemical Waste Management Program</p> <p><b>14:15</b> <b>OC49: PAOLA FUENTES SCHWEIZER</b><br/>Study of the Durazno River, a multidisciplinary approach</p> <p><b>14:30</b> <b>OC31: ROSA ALFARO SOLÍS</b><br/>Monitoring of Thermal Waters around Arenal Volcano (1985-2023), Costa Rica</p> <p><b>14:45</b> <b>SCANCO: Espectrometría de masas para análisis orgánico</b></p> <p><b>15:00</b> <b>COFFEE BREAK</b></p> <p><b>15:30</b> <b>Dra. SANDRA CAUFFMAN</b><br/>Astrophysics Division, NASA</p> <p><b>PLENARIA: HOW CHEMISTRY HELPS US VIEW AND UNDERSTAND OUR HOME PLANET AND THE UNIVERSE</b></p> <p><b>16:15</b> <b>CLAUSURA</b></p> |
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# AGENDA

## SALA 2

**Viernes 26** de Julio  
Auditorio Cora Ferro  
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UNA-Heredia

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|--------------|--|--|
| <b>10:00</b> | <b>COFFEE BREAK</b>  |  |
| <b>10:30</b> | <b>OC41: JOSÉ PABLO SIBAJA BRENES</b><br>Volcanic Monitoring with UAV (Unmanned Aerial Vehicle) of the Hyperacidic Lagoon of Poás Volcano, Costa Rica  |  |
| <b>10:45</b> | <b>OC20: CHRISTOPHER N. BODDY</b><br>Armeniaspirols Are A New Class of Antibiotics that Target Clp Proteases in Gram-Positive Bacteria   |  |
| <b>11:00</b> | <b>OC24: GERMAIN ESQUIVEL HERNÁNDEZ</b><br>Stable isotopes (2H, 13C, 15N, and 18O) as tools to advance atmospheric studies in tropical atmospheres: The Central Valley of Costa Rica as a case study |  |
| <b>11:15</b> | <b>OC50: DIDIER RAMÍREZ MORALES</b><br>Development of SEAP enzyme expression vectors as a strategy for measuring transcription factor activity in cell lines   |  |
| <b>11:30</b> | <b>OC51: JOSUÉ OROZCO AGUILAR</b><br>Effect of sesquiterpene lactones on reactive oxygen species production in neuronal cells  |  |
| <b>12:00</b> | <b>ALMUERZO</b>  |  |
| <b>13:45</b> | <b>OC39: GISELLE TAMAYO CASTILLO</b><br>Exploring Chemical Spaces and Metabolomics with Nuclear Magnetic Resonance: Two Concrete Studies   |  |
| <b>14:00</b> | <b>OC25: ESTEBAN BERTSCH</b><br>Critical Assessment of pH-Dependent Lipophilicity Profiles of Small Molecules: A Classification Machine Learning Approach  |  |
| <b>14:15</b> | <b>OC28: JOAQUÍN CALBO</b><br>Strategies to boost electrical conductivity in porous materials: a computational perspective   |  |
| <b>14:30</b> | <b>OC34: RENÉ MORA CASAL</b><br>On the Definition of the "KY" Global Mass Transfer Coefficient, or the Unanswered Question (until Now)   |  |
| <b>14:45</b> | <b>OC04: JOSÉ A. GUTIÉRREZ ORTEGA</b><br>Functionalized Hybrid Materials for Selective Contaminant Removal: An Integral Approach Using the Sol-Gel Technique   |  |
| <b>15:00</b> | <b>COFFEE BREAK</b>  |  |



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# AGENDA

## SALA 1B

**Martes 23 de Julio**

**14:30**

**Miércoles 24 de Julio**

**15:00**

**Auditorio Cora Ferro**

**Calabrese**

**UNA-Heredia**

P-1 Torrentes-Espinoza, Gerald

Computational Fluid Dynamics simulation on the thermal and hydrodynamic behavior of a SiO<sub>2</sub> – H<sub>2</sub>O nanofluid in the transition flow regime

P-2 Torrentes-Espinoza, Gerald

Computational Fluid Dynamics Analysis of Erosive Wear in a Slurry Pipe System with a Focus on a Pipe Bend  
Biocontroller potential of secondary metabolites produced by weeds *Amaranthus spinosus*, *Taraxacum officinale*, *Sida rhombifolia*: a project from the classroom

P-3 Valdes Diaz, Sandra

Learning projects in the Industrial Chemistry Career: Diagnosing the management of pharmaceutical waste and alkaline batteries

P-4 Valdes Diaz, Sandra

Dissolved organic matter (DOM) fluorescence in representative lake systems of Costa Rica: a qualitatively approach to identify its composition

P-5 Abarca Herrera, Andrés

Spectroscopic characterization of functionalized hydrophobic silica aerogels as carriers of a plastic degrading enzyme

P-6 Alpizar-Rojas, Tatiana

Hydrogels based on Oxidized Galactomannan/Carboxyethyl Chitosan reinforced with glass nanoparticles for biomedical application

P-7 Azevedo, Pedro

Validation of an analytical methodology for the determination of fortified B-complex vitamins in Costa Rican rice

P-8 Rivera-Parra, Kennder

Monitoring and Evaluation of Air Quality in Places Nearby Volcanic Activity in Costa Rica

P-10 Alvarado, Juan

Verification of regulation of methanol and alcohol content in Spirit beverages: Costa Rica scenario

P-11 Quirós-Fallas, Andrea

Chemical characterization of English earthenware found under the cobbled courtyard of an old house in Lima Peru  
Cationic functionalization strategies of polysaccharides for the development of carriers for anionic biomacromolecules

P-12 Garvich, Camila

P-13 Domínguez-Fonseca, Estefanía

Preliminary screening of phytochemical compounds for *Trigonidium egertonianum*

P-14 Guevara Obando, C.



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P-17 Pablo Jiménez Bonilla

Production of nitrogen substitutes for potential animal feeding generated through bio-processing from symbiotic feedstock involving ferns and bacteria

P-18 Gómez-Ortega, Ariana

Bacterial cellulose obtained after extraction and purification of Kombucha

P-19 Vega Aguilar Nancy V.

Identification of microplastic and PAHs in the atmospheric aerosol PM2.5 of the Port of Veracruz

P-20 Rojas García, Maikol

Quantification of chemical waste in laboratory classrooms

P-22 Vargas Ocampo, Joseph

EDUQUIM, a Education Program in Chemistry.

P-24 Saborío-González, Irina

Antioxidant extracts from rambutan peel for potential pig's dietary supplement

P-25 Pardo, Laura

Identification, quantification, and mechanism of action of cathinones in the central nervous system

P-26 González-Hernández, Joaquín E.

Nanostructured Al-Mg alloys produced through High-Pressure Torsion for fabrication of Al-air battery

P-27 González-Jiménez, Kathy.A.

Effect of High-Pressure Torsion Deformation on Ti-25at%Nb Alloys Synthesized from Elemental Powders

P-28 Porras Fonseca, Michel

Evaluating the Impact of Poás Volcano Activity on Botos Lake Water Quality: Implications for Safety and Environmental Management

P-29 Rodríguez-Quesada, Kerling

Optimizing the extraction and chemical isolation of soluble proteins from Costa Rican beans (*Phaseolus vulgaris*, Fabaceae) for enhanced characterization and pest resistance assessment

P-30 Guadamuz-Mayorga, Carolina

Development of Technological Alternatives and Physical-Chemical Characterization of Two Agro-Industrial Products from Papaya and Coconut Water to Improve the Competitiveness of PYME in Limón, Costa Rica



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18 años  
LANOTEC  
Laboratorio Nacional de Nanotecnología

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P-31	Escalante-Campos, E.	Synthesis of polypyrrole and polypyrrole/carboxymethylcellulose (CMC) and their characterization as adsorbents for the contaminant aspirin (acetylsalicylic acid) in aqueous medium
P-33	Esquivel, Adriana	Validation of a method for the analysis of total mercury in fish muscle by cold vapor atomic absorption spectroscopy (CVAAS) with a direct mercury analyzer (DMA)
P-34	Brenes-Ortiz, Mónica Ariana	Study of physical, chemical, and microbiological characteristics of drinking water used in Los Quetzales National Park and Tapantí National Park (Macizo de la Muerte and La Esperanza sectors)
P-36	Erika Alfaro-Chavarria	Rainwater monitoring in the region of the Irazú Volcano, Costa Rica
P-37	Luckert Froget Simón	Isolation and characterization of lignin from Agave tequilana weber bagasse obtaining by Organosolv and Kraft methods
P-38	Solano-Castro, Rubén	Methodological adaptation for the measurement of biosurfactant concentration using VPBO and its respective absorbance
P-39	Zamora-Rojas, Tatiana	Bioabsorbable and nanostructured Mg-Ca alloys processed by high-pressure torsion: microstructure evolution, mechanical and electrochemical properties
P-40	Fernández-Sánchez, Oscar	Rapid HPLC-DAD method for the determination of thiamine, folic acid and niacin in fortified rice for monitoring fortification programs: Development and validation
P-41	Carvajal-Johnson, Isabel	Cellulose nanofibers obtained from pineapple waste for possible use in biomedical applications
P-42	Oller, Javier	Boltzmann weighted local reactivity descriptors in condensed phases and biological systems
P-43	Zaldua Daniela	The Massive Open Online Course as an Alternative for Learning the Mechanisms of Neurotransmission and Gas Chromatography



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P-44 Curiel-Olague, Brenda Gisella

Solid state  $^{13}\text{C}$ -NMR evaluation of Bacterial Cellulose production from labeled D-Glucose- $^{13}\text{C}_6$  with addition of ethanol and glycerol

P-45 Orellana-Garcia, Franklin

Roselle Extract as an Indicator in an Acid-Base Titration

P-46 Yassir Rivera Espinoza

Balances calibration and maintenance program in laboratory classrooms

P-47 Zárate-Montero, German

Compliance record for iso-17025 standard in testing and calibration laboratories using open-source software: ORGANILAB 2.0

P-48 Sáenz Rosales, Oscar

Educational proposal for academic restructuring based on environmental analysis and awareness in Organic Chemistry courses at the University of Costa Rica

P-49 Solís-Torres, Ligia

What to do when 50 + 50 does not equal 100?

P-50 Irías-Mata, Andrea

Potential use of vitamin E as a biomarker of longevity in rice seeds (*Oryza sativa* L.) of varieties grown and marketed in Costa Rica

P-51 Alvarado, Priscilla

Impact of fermentation time on the chemical characteristics of traditional cocoa micro-batches from Upala, Costa Rica

Chaves-Barquero, LG; Humeniuk, B.W.;

Luong, K.H.; Cicek, N.; Wong, C.S.; Hanson,

P-52 M.L.

Crushed recycled glass as a substrate for constructed wetland wastewater treatment: a case study of its potential to facilitate pharmaceutical removal



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