



BUENOS AIRES 2023

JUNE 4 - 8

WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING

IACCHE - XXX INTERAMERICAN CONGRESS OF CHEMICAL ENGINEERING

CAIQ2023 - XI ARGENTINIAN CONGRESS OF CHEMICAL ENGINEERING

CIBIQ2023 - II IBEROAMERICAN CONGRESS OF CHEMICAL ENGINEERING

Buenos Aires - Argentina - June 4-8, 2023

"The global chemical engineering working for a better future world"

WCCE11-Area 12- SUSTAINABILITY AND THE ENVIRONMENT

Preliminary technical program

Tuesday, June 6, 2023, Room 11 Oral presentations

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|-------------|-------------------------------------|---|---------------------------------------|
| 9:00-9:30 | 1888 | KEYNOTE Sustainability analysis and profitability risk assessment of poly(3-hydroxybutyrate) production from sugar beet pulp | Ioannidou Sofía et al. |
| 9:30-9:45 | 2425 | Evaluating the environmental performance and material efficiency of an Industrial Symbiosis Network in Mendoza, Argentina | Arce Bastias Fernando et al. |
| 9:45-10:00 | 2749 | Analysis of the life cycle of the product of the pisco industry | Sotelo Alca Julio et al. |
| 10:00-10:15 | 2339 | Optimization of the Argentine citrus supply chain with a life cycle approach | Iñigo Martínez et al. |
| 10:15-10:20 | 1780 | Life Cycle Assessment Tool Integrated to Process Monitoring, Design and Control Environment | Miyoshi, Simone et al. |
| 10:20-10:25 | 1700 | Simulation of tire pyrolysis processes in rotary kilns reactors | Rojas Jerez Juan Felipe et al. |
| 10:25-10:30 | Questions flash oral presentations | | |
| 10:30-11:00 | Coffee Break and Posters Discussion | | |
| 11:30-11:45 | 2816 | Catalytic fast pyrolysis of olive stone for bio-oil deoxygenation | María del Carmen Recio-Ruiz, et al. |
| 11:45-12:00 | 2078 | Maritime transportation planning under carbon intensity constraints for sustainable supply chains | Presser et al. |
| 12:00-12:05 | 2466 | Supply Chain Optimization for Plastic Upcycling Considering Economic and Environmental Indicators | Badejo et al. |
| 12:05-12:10 | 1323 | Process Data Application in the Analysis of Environmental Impact of Hydrotreating Fuels, Using the Life Cycle Assessment | Morales-Medina, G. |
| 12:10-12:15 | 2890 | Multi-scale techno-economic assessment of processes for the stabilization of digestat | Martin Hernandez Edgar et al. |
| 12:15-12:20 | 2118 | The need for a systematic application of environmental impact assessment methods in process systems engineering | Sin et al. |
| 12:20-12:30 | Questions flash oral presentations | | |
| 12:30-14:00 | Lunch Interval | | |
| 14:00-14:15 | 2963 | Oil adsorption by ZIF-L: kinetics, adsorbent dosage and recyclability | Meiry Gláucia Freire Rodrigues et al. |

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| 14:15-14:30 | 1848 | Fluorine adsorption in calcium-functionalized chitosan matrices: kinetics, adsorption isotherm, influence of pH, and adsorbent dose | Lobo Cintia et al. |
| 14:30-14:45 | 2164 | Development of organic pollutant adsorbent materials from shrimp shells processing wastes | Carpintero María et al. |
| 14:45-15:00 | 2655 | Superior arsenic adsorption by growing iron oxide nanoparticles inside electrospun PVA nanofibers | Torasso Nicolás |
| 15:30-15:35 | 2224 | Effect of the presence of sediments on the distribution of hydrocarbons after an oil spill in fresh water | Ibarra Mojica et al. |
| 15:35-15:40 | 1406 | Na-P1 zeolite/alginate composite and its uranium removal performance - batch, and spectroscopic investigations | Sobczyk et al. |
| 15:40-15:45 | 1496 | Study of the degree of polymerization of regenerated cellulose from cotton waste in imidazolium ionic liquids | Brito et al. |
| 15:45-15:50 | 1915 | Boosting the properties of recovered carbon black from end-of-life tires | Silva Clara et al. |
| 15:50-15:55 | 1956 | Hemicellulose recovery from kraft black liquor and its cationization for applying as a flocculant for PCC suspension | Gando-Ferreira et al. |
| 15:55-16:00 | Questions flash oral presentations | | |
| 16:00-16:30 | Coffee Break and Posters Discussion | | |
| 16:30-17:30 | Plenary Conference | | |
| 17:30-18:30 | Posters Discussion | | |
| Congress Dinner | | | |



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WCCE11-Area 12- SUSTAINABILITY AND THE ENVIRONMENT

Tuesday June 6, 2023. POSTERS SESSION.

| | | |
|------|---|-------------------------------------|
| 2900 | Biogas production as a promoter for rural development: a case study. | Sanz Smachetti et al |
| 2925 | Synthesis of magnetite-chitosan-starch spheres for the adsorption of red alizarin S (ARS) and Orange II | Cuevas et al. |
| 2970 | Application of the QWASI Model, to simulate the distribution of the Mirex contaminant in different compartments, in Lake Ontario, Canada | Choccare Gutierrez, Enrique Antonio |
| 2900 | Biogas production as a promoter for rural development: a case study | Echarte, Mercedes |
| 2922 | Development of a tannin-based adhesive from poplar bark byproducts for short term food-packaging using a circular economy approach | Oliveira Susana |
| 1340 | Influence of pH on adsorption of the anti-inflammatory diclofenac by green functionalized carbon nanotubes | Pires Spaolonzi et al. |
| 1370 | Comparative study of the environmental risks associated with construction and demolition waste deposits | Machado et al. |
| 1416 | Characterization chemical and biochemical of the biosurfactant produced in the biorefinery context | Barbosa et al. |
| 1441 | Efficient removal of Cr(VI) ions from aqueous solutions: Preparation and application of arabinogalactan coated magnetic nanoparticles | Leitgeb et al. |
| 1485 | Activated carbon production from lignocellulosic waste for CO ₂ capture systems | Bavio et al. |
| 1448 | Green iron-based nanoparticles for Cr(VI) removal | Paronetto et al. |
| 1484 | A cost-effective bioaugmentation strategy: application of microbial consortia from residual sludge | Olivera et al. |
| 1506 | Application of statistical experimental design for discoloration of colored cotton residues in order to obtain cellulose film regenerated with ionic liquid | Ferreira Knihs et al. |
| 1597 | Synthetic and natural hydroxyapatite as adsorbents: production, characterization, and affinity test | Dutra Valente Duarte et al. |
| 1679 | Reduced Graphene oxide-Fe ₃ O ₄ hybrid nanoadsorbent for adsorption of tetracycline in aqueous medium | Onaga et al. |
| 1538 | Individual-based modeling of biological treatment systems in windrows of petroleum hydrocarbon-polluted soils | Alvarez Arce et al. |
| 1550 | Modeling of biological treatment systems (landfarming) of soils with petroleum hydrocarbons | Araujo-Zambrano et al. |
| 1736 | Preliminary design of brewer's spent grain pretreatment plant for energetic applications | Leonel et al. |
| 1763 | Evaluation of the pH effect on the adsorption of losartan potassium using carbon nanotubes | Gomes Oliveira et al. |
| 1762 | The evaluation of electrocoagulation and optimization of microbiological process of effluent treatment of a cosmetics industry | Schneider et al. |
| 1767 | The influence of the moisture content and the apparent dry specific weight on soil-cement-aish mixture | Gonçalves et al. |
| 2519 | Luffa cylindrica-based sorbent materials for selective separation of oil in water | Andrade Santos |
| 1378 | Immobilized TiO ₂ photocatalysis for bacterial biofilm inactivation in water | Pablos Carro et al. |



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WCCE11-Area 12- SUSTAINABILITY AND THE ENVIRONMENT

Wednesday, June 7, 2023. Oral Presentations . Room 11

| | | | |
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| 9:00-9:30 | 1795 | KEYNOTE Bacteria-Mediated Struvite Precipitation for Organic Phosphorus Recovery in wastewater | Zhenhua Wang |
| 9:30-9:45 | 2636 | Obtaining and characterization of dietary fibers from organic discards | Pilatti et al. |
| 9:45-10:00 | 1923 | Thermogravimetric study and product analysis of slow pyrolysis of Rosa rubiginosa L. husk waste after pectin extraction | Torres-Sciancalepore et al. |
| 10:00-10:15 | 1503 | Obtaining a regenerated cellulose film from colored cotton waste dissolved with ionic liquid | Ferreira Knihis et al. |
| 10:15-10:20 | 1496 | Study of the degree of polymerization of regenerated cellulose from cotton waste in imidazolium ionic liquids | Brito |
| 10:20-10:25 | 1915 | Boosting the properties of recovered carbon black from end-of-life tires | Silva et al. |
| 10:25-10:30 | | Questions flash oral presentations | |
| 10:30-11:30 | | Coffee Break and Posters Discussion | |
| 11:30-12:30 | | Section plenaries | |
| 12:30-14:00 | | Lunch Interval | |
| 14:00-14:15 | 2327 | Assessing of green energy technologies sustainability by critical material circularity analysis | Rahimpour Golroudbary et al. |
| 14:15-14:30 | 2526 | Production of Cordierite Based Ceramic Membrane from Magnesite Waste | Artun et al. |
| 14:30-14:45 | 1748 | Improving saccharification of cellulosic and lignocellulosic residues | |
| 14:45-15:00 | 2901 | Reject brine valorization through mineral carbonation: A kinetics study | El-Naas, Muftah H |
| 15:00-15:15 | 1513 | Control of the properties of rice husk ash | Sánchez et al. |
| 15:30-15:35 | 1574 | Activated carbons obtained from waste: synthesis and characterization | Figueiredo et al. |
| 15:35-15:40 | 1477 | Optimization of the chemical activation conditions to produce bio-based carbons for energy storage | Jerez et al. |
| 15:40-15:45 | 2351 | Composting and on-site reusing of pear pomace | Iturmendi et al. |
| 15:45-16:00 | | Questions flash oral presentations | |
| 16:00-16:30 | | Coffee Break and Posters Discussion | |
| 16:30-16:45 | 2342 | Fast Pyrolysis for Chemical Recycling of Agricultural Waste Plastic | Rodriguez Garrido et al. |
| 16:45-16:50 | 1956 | Hemicellulose recovery from kraft black liquor and its cationization for applying as a flocculant for PCC suspension | Gando-Ferreira et al. |
| 16:50-16:55 | 1578 | Improvements in sewage and cellulose industry sludge treatment using thermal hydrolysis | Goycoechea et al. |
| 16:55-17:00 | 2060 | Enhanced Green Methanol from Renewable Solid Carbon via the Boudouard Reaction | Medrano-García et al. |
| 17:00-17:05 | 1652 | A water allocation indicator for hydrographic basins | Andonie Bahamondes et al. |
| 17:05-17:10 | 2153 | Synthesis of 3D TiO ₂ /Cellulose composites by microwave irradiation | Maria Melo Souza Sales et al. |
| 17:10- 17:20 | | Questions flash oral presentations | |
| 17:30-18:30 | | Plenary Conference | |
| 18:30-19:30 | | Posters Discussion | |



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Wednesday June 7, 2023 . POSTERS SESSION

| | | |
|------|--|--------------------------|
| 1530 | Oxygen uptake response of activated sludge and Escherichia coli exposed to nanomaterials | Aude Luppi et al. |
| 1853 | Production of activated carbon from drawer waste | Guerrero Vejarano et al. |
| 1881 | Reduction of the bioavailability of Cd in soils cultivated with Theobroma cacao from the applicatio | Lopez et al. |
| 1882 | Case study of the application of two amendments to agricultural soils contaminated with nickel, | Lopez et al. |
| 1891 | Synthesis of zeolitic materials from solid residues of the Argentinian brewing industry | Massa et al. |
| 1896 | Treatment of wastewater from a fish canning factory by electrocoagulation and electrochemical o | Alvarez Arce et al. |
| 1869 | Divalent cation Cu-Pb-Zn solutions and their mixtures treated by metallic electrodeposition on pencil graphite electrodes. | Gonzalez Mercado et al. |
| 1904 | Sustainable activated carbon obtained using crude glycerol from biodiesel plants and its application for electrochemical desalination | Ruotolo et al. |
| 1910 | Analysis of population dynamics in the anaerobic co-digestion of sewage sludge, vinasse and poultry manure. | Sillero Moreno et al. |
| 1911 | Techno-economic analysis of single-stage and temperature-phase anaerobic co-digestion of sewage sludge, wine vinasse, and poultry manure | Sillero Moreno et al. |
| 1973 | Effect of hydrothermal treatment of wet olive pomace to obtain phenolic compounds with antioxidant activity | Cabrera et al. |
| 2027 | A Carbon Dioxide adsorption: isotherm and temperature effect on breakthrough curve | García Martínez et al. |
| 2028 | Preparation of zinc oxide from used batteries for the recycled oil transesterification | Pinos et al. |
| 2158 | An optimization model to minimize the water footprint and costs of a brewing industry | Mainardi Remis et al. |
| 2095 | Exploratory synthesis of magnetic chitosan macrospheres | Rial et al. |
| 2098 | Preliminary synthesis of hematin supported on magnetic chitosan macrospheres | Rial et al. |
| 2168 | Photocatalytic degradation of endocrine disruptors in water using porous inorganic/carbon hybrid materials | Aquino et al. |
| 2172 | Improvement of environmental performance in the production of pisco through the recovery of grape seed oil by supercritical extraction | Gusukuma et al. |
| 2189 | Performance of hydrous iron oxide for dissolved organic phosphorus adsorption from wastewater | Santiviago et al. |
| 2203 | Evaluation of methods for the synthesis of biodegradable sponges for oil spills from residues of the poultry industry | Orjuela-Palacio et al. |
| 2207 | Molecular modeling of antibiotics in water remediation: feasibility analysis of plasma as a green and efficient technology | Diaz Bukvic et al. |
| 2212 | Comparative techno economical evaluation of mechanical dewatering of sludges in the dairy industry | Porley Santana et al. |
| 2211 | Nitrite removal by hydrodynamic cavitation | Cabañas et al. |



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Thursday, June 8, 2023. Oral presentations. Room 11

| | | | |
|-------------|--|--|--------------------------------|
| 9:00-9:30 | 1577 | KEY NOTE Field evaluation of the sustainability and efficiency of an arsenic removal plant based on the zero-valent iron technology | Berardozi, E et al. |
| 9:30-9:45 | 2967 | Removal of antibiotics from aqueous solutions using ozone-based oxidation technologies | Vázquez-Vázquez et al. |
| 9:45-10:00 | 2291 | Electrocoagulation to remove micro-polystyrene particles in wastewater | Mateo S. et al. |
| 10:00-10:15 | 1829 | Hydrodynamic cavitation effects over protein-like organic matter | Fleite Santiago Nicolas et al. |
| 10:15-10:20 | 2948 | Perfluorooctanoic acid (PFOA) removal using advanced oxidation technologies based on light rad | Quiroz-Vela et al |
| 10:20-10:25 | 1653 | Iron nanoparticles based nanofluids for in situ environmental remediation | Crespi et al. |
| 10:25-10:30 | Questions flash oral presentations | | |
| 10:30-11:00 | Coffee Break and Posters Discussion | | |

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| 11:00-11:15 | 1381 | Bacterial community composition in a pilot-scale wastewater treatment plant | Perveen et al. |
| 11:15-11:30 | 2711 | Treatment and valorization of toluene and styrene from waste gas streams by <i>Pseudomonas fulva</i> | Acevedo et al. |
| 11:30-11:45 | 2316 | Bioenergy and carbon dioxide sinking in the sugarcane-industry: techno-environmental assessment | Machin Ferrero et al. |
| 11:50-11:55 | 1390 | Kinetic modelling of colour formation in water solutions of sulphamethoxazole oxidized by photo-Fenton treatment | Lomas, J.M et al. |
| 11:55-12:00 | 2927 | Microbiologically induced calcite precipitation process (MICP) as a tool to control windblown dust emissions from mine tailings | Zuñiga Hector et al. |
| 12:05-12:10 | 1997 | Integrated technologies for the household greywater treatment and reuse in the Chilean context | Abejón et al. |
| 12:10-12:15 | 2733 | Green approaches for the synthesis of Carbon Quantum Dots | Gomes, S.Y. et al. |
| 12:15-12:30 | Questions flash oral presentations | | |

12:30-14:00

Lunch Interval

WCCE11-Area 12- SUSTAINABILITY AND THE ENVIRONMENT

AUDITORIO 1

Thursday, June 8, 2023. Oral presentations . Room 11

| | | | |
|--------------|--|---|---------------------------|
| 14:00-14:15 | 2269 | Design, Prototyping, and Performance Evaluation of UV-LED Reactor for Water Treatment | Taghipour Fariborz et al. |
| 14:15-14:30 | 2798 | Dyes and arsenic removal by carbon nanofiber composites dispersed in a PVA electrospun mat | Goyanes S. et al. |
| 14:30-14:45 | 1601 | Bacteriostatic filter media – standard test methods adapted for representative assessment of composite filters with an enhanced biofouling resistance | Stor, M. et al. |
| 14:45-15:00 | 1611 | Empleo de campos magnéticos para el control de las propiedades fotocatalíticas de electrodos de TiO ₂ nanoparticulados | Manríquez, J et al. |
| 15:00- 15:05 | 1390 | Kinetic modelling of colour formation in water solutions of sulphamethoxazole oxidized by photo-Fenton treatment | Lomas, J.M et al. |
| 15:05-15:10 | 1386 | Turbidity formation in water solutions of sulphamethoxazole oxidized by photo-Fenton treatment | Lomas, J.M et al. |
| 15:10-15:15 | 1338 | Green-modified carbon nanotubes for adsorption of antibiotics: A dosage study | Vieira, M.G.A et al. |
| 15:15-15:20 | 1446 | Do microplastics affect the particle removal by sand filters? | Gentile et al. |
| 15:20-15:30 | Questions Flash oral presentations | | |
| 15:30-16:00 | Posters Discussion | | |
| 16:00-16:30 | Coffee Break and Posters Discussion | | |
| 16:30-17:30 | Plenary Conference | | |
| 17:30-18:30 | Closing Ceremony | | |



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WCCE11. Area 12- SUSTAINABILITY AND THE ENVIRONMENT

Thursday, June 8, 2023 Poster Session

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| 2244 | Obtaining formic acid from potato peels and its potential use as LOHC (Liquid Organic Hydrogen C | Trigo et al. |
| 2299 | Spirulina platensis protein extract as an additive to improve the removal capacity of protein hydrogels | Dorso et al. |
| 2332 | Valorization of plastic waste from polymerization process of styrenic resins | Volpin et al |
| 2336 | Stabilization/Solidification of EAFD waste using nano-silica and blast furnace slag-based geopolymer | Luna Galiano |
| 2154 | Synthesis of magnetite-chitosan-starch spheres for the adsorption of red alizarin S (ARS) and Orange-II | Cuevas et al. |
| 2374 | Production of single-carbon chemicals from multi-source industrial CO ₂ . Techno-economic and environmental analysis | Araujo et al. |
| 2435 | Selective lithium recovery from desalination plant concentrates | Fernández-Escalante et al. |
| 2449 | Adsorption of ciprofloxacin on materials obtained from recycled industrial waste | Melia Lucas et al. |
| 2499 | Electrochemical remediation of an antidepressant used to treat the effects caused by the COVID-19 pandemic. Intermediates, final products analysis and degradation pathway proposal | Schröder Sophie et al. |
| 2510 | Biodegradation Evaluation of the Insecticide Imidacloprid in a Moving Bed Biofilm Reactor (MBBR) and its Impact on the COD and Ammonium Removal. | Cazelato Gaioto et al. |
| 2556 | Evaluation of the effect of temperature over the removal of chromium (VI) onto sawdust | Tejada Tovar et al. |
| 2582 | Evaluation of the anthropogenic affectation in water coast systems through physicochemical and birds parameters. Case: Juan Angola creek | Leones et al. |
| 2630 | Development of new materials for water treatment using a biowaste derived from soybean production | Mendiberri et al. |
| 2701 | Degradation and valorisation of VOCs in a bubble column reactor | Rodriguez et al. |
| 2703 | Use of multivariate analysis for the quantification of arsenic in the presence of phosphates in water treatment plants | Berardozzi et al. |
| 2760 | Green approaches for the synthesis of Carbon Quantum Dots | Arias Velasco et al. |
| 2713 | Removal of Ca ²⁺ Ion using ion exchange process | Lied et al. |
| 1392 | Application routes of fly ash transformation products | Franus et al. |
| 2358 | Alginate and chitosan-based adsorbent materials for copper and lead abatement from wastewater: Synthesis of composite biomaterials for wastewater treatment. | Gutierrez Laura et al. |
| 1354 | Optimization of stabilization pond design for meat industry wastewater using computational fluid | Arturi T et al. |
| 2411 | Production of 5-Hydroxymethylfurfural and HMF Derivatives by Sustainable Utilization of Sugar Beet Molasses by Hydrothermal and Biological Treatment | Rocha, S., Pérez-Pantoja, D., Marzalletti, T., Kopp, M., Cea, M |