



**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 2- CHEMICAL REACTION ENGINEERING AND CATALYSIS**

**Preliminary technical program**

*Monday June 5, 2023, Oral presentations Room 9*

9:00-9:30	2265	<b>KEYNOTE</b> Performance intensification of converting greenhouse gas (GHG) by auto-methanation with	Fukuhara et al.
9:30-9:45	2919	Designing active and stable Cu-based catalysts for CO <sub>2</sub> hydrogenation to methanol: opportunities and challenges	El-Naas et al.
9:45-10:00	2883	Synthesis of porous hydrous zirconia as a versatile catalytic support for the conversion of lignocellulosic biomass into value-added chemicals	Piovano et al.
10:00-10:15	1946	Numerical Analysis of the Direct Reduction Process in a Midrex Furnace	Peters et al.
10:15-10:20	2787	The Electrochemical treatment of Tequila vinasses from biological processes	Escudero Santiago et al.
10:25-10:30	<b>Questions flash oral presentations</b>		
10:30-11:00	<b>Coffee Break and Posters Discussion</b>		
11:00-11:30	<b>Posters Discussion</b>		
11:30-12:30	<b>Section plenary: Presentation of the Chapter on "Chemicals" from 2022 CAETS Energy Report Towards Low GHG Emissions from Energy Use in Selected Sectors</b> <b>Michael Matlosz, National Academy of Technology/ France</b> <b>Oscar Vignart (Presenter), National Academy of Engineering/ Argentina</b>		
12:30-14:00	<b>Lunch Interval</b>		
14:00-14:30	1435	<b>KEYNOTE</b> Three-phase trickle-bed reactor modeling for LOHC hydrogenation/dehydrogenation reactions	Panzone et al.
14:30-14:45	2116	Mechanisms of CO <sub>2</sub> conversion and catalyst deactivation during methanol synthesis for a robust operation description via microkinetic modelling	Prašnikar et al.
14:45-14:50	2500	Development of a mesofluidic-based protocol for the evaluation of the photochemical environmental persistence of contaminants in surface waters	de Oliveira et al.
14:55-15:00	2005	Screening of transition metal doped ZSM-5 zeolite for catalytic cracking of biomass pyrolysis	Crespo et al.
15:00-15:05	1940	Chemical recycling of waste motor oil by biochar heterogeneous catalysts	Ponce et al.
15:05-15:10	1840	Conversion of glucose and cellulose to 5-hydroxymethylfural using different acid catalysts	Siqueira Mancilha Muniz Toledo Nogueira et al.

15:10-15:15	1710	An approach to bacterial conjugation through agent-based modelling in a predator-prey relationship	Londoño-Larrea et al.
15:15- 15:20	2645	Environmentally friendly catalytic oxidation of hemicelluloses	Tolvanen et al.
15:20-15:25	2666	Integrated continuous flow microreactor for the enzymatic treatment of acetaminophen with alginate-laccase microcapsules under a controlled temperature	Osma et al.
15:25-16:00	<b>Questions flash oral presentations</b>		
16:00-16:30	<b>Coffee Break and Posters Discussion</b>		
16:30- 17:30	<b>Posters Discussion</b>		
17:30-18:30	<b>Plenary Conference</b>		
18:30-19:30	<b>Posters Discussion</b>		



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## WCCE11-Area 2- CHEMICAL REACTION ENGINEERING AND CATALYSIS

### Monday June 5, 2023. POSTERS SESSION

1341	Calcium loaded Geopolymeric Catalyst for Knoevenagel Condensation Reaction: A DFT study	MISRA et al.
1348	Investigating the effect of the template on the structure and activity of SAPO-34 catalyst in methanol conversion to light olefins	Ghavi pour et al.
1397	Effect of MnOx content supported onto mesoporous SiO2 obtained from rice husk in the combustion of propane	Torres Brunengo et al.
1648	Surface study of TiO <sub>2</sub> -OT <sub>n</sub> <sup>+</sup> /HY as a photocatalyst for treating contaminated water with a recalcitrant compound	Flores Muñoz et al.
1719	Characterization of epoxidized soybean oil by 1H-NMR	Olivieri et al.
1996	1-Ethyl-3-methylimidazolium acetate ionic liquid as a base catalyst and solvent media in selective and metal-free thermal depolymerization of poly-(3-hydroxybutyrate) to crotonic acid	Khokarale et al.
2237	Thermodynamic tool for biphasic reaction optimization applied to glycerol esterification	Rovezzi et al.
2728	Combined CO and CO <sub>2</sub> methanation kinetics based on spatially resolved measurement	Surendran et al.
2774	The Key Role of Tartrate Ion in Copper Leaching and Electrodeposition Processes from Copper Oxide Ore	Sueros Velarde et al.
2789	Kinetic modeling of phenol hydrodeoxygenation over CoMoS-based catalysts supported on mixed oxides: Kinetic modeling	Pinzón Ramos et al.
2795	Effect of biomass syngas impurities on the catalytic performance of iron-zirconia fibrillar catalysts for Fischer-Tropsch synthesis	Rodríguez-Cano et al.
2840	Thiol-ene coupling reaction between methyl oleate and cysteamine hydrochloride: kinetic study and mathematical modeling	Soria et al.
2869	Novel approach in the green synthesis of diphenolic acid	Orabona et al.
2904	Structured bimetallic catalysts PtCo-Mor and PtCu-Mor for COPrOx reaction	Gomez et al.
2912	Optimizing lactic acid production from bio-derived sugars with an experimental design using response surface methodology (RSM)	Piovano et al.
2923	Study on the kinetic mechanism of manganese precipitation via sodium hypochlorite oxidation in acidic environments	Córdova-Udaeta et al.
2961	The Ethanol and Glycerin utilization in Chemical Looping for syngas production	Barbosa et al.
2402	LaCo <sub>0,75</sub> Fe <sub>0,25</sub> O <sub>3</sub> monolithic catalyst used in chlorobenzene combustion	Acosta Pérez et al.



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### WCCE11-Area 2- CHEMICAL REACTION ENGINEERING AND CATALYSIS

Tuesday, June 6, 2023. Oral Presentations Room 9

9:00-9:30	2956	<b>KEYNOTE</b> The Concept, Production and Scale-up in a Sustainable Aviation Fuel Pilot Unit from the Chemical Looping Reform to Upgrading of Syncrude	Almeida Barbosa et al.
9:30-9:45	1376	Modelling of a trickle bed reactor: Effect of particle shape and reactor length on sugar oxidation on gold catalyst extrudates	Hachhach et al.
9:45-10:00	1349	In-situ synthesis of SAPO-34 on -Al <sub>2</sub> O <sub>3</sub> microspheres: suitable catalyst shaping for the fluidized-bed reactor of methanol conversion to light olefins	Ghavipour et al.
10:00-10:05	1331	Ru/C Solid Foam Catalyst for Hydrogenation of Sugars: Catalyst Development and Kinetic Study	Araujo Barahona et al.
10:05-10:10	2686	CO-PrOx in a milireactor 3d-printed by FDM	Oddi et al.
10:10-10:15	2356	Theoretical and experimental study of methane and hydrogen production through the photocatalytic	Ballari et al.
10:15-10:20	2517	Controlled depolymerization of polycarbonates as a new strategy for chemical recycling of polymer	Gilbert et al.
10:20-10:30		<b>Questions flash oral presentations</b>	
10:30-11:30		<b>Coffee Break and Posters Discussion</b>	
11:30-12:30		<b>Section plenaries</b>	
		<b>Lunch Interval</b>	
12:30-14:00			
14:00-14:30	2919	<b>KEYNOTE</b> Designing active and stable Cu-based catalysts for CO <sub>2</sub> hydrogenation to methanol: opportunities and challenges	El-Naas et al.
14:30-14:45	2853	Catalytic decomposition of methane to obtain H <sub>2</sub> with catalysts synthesized from sewage sludge from the galvanoplasty industry	Montero
14:45-15:00	2047	Application of Hybrid Solar-Powered Electrocoagulation and Electrooxidation System for Textile Wastewater Treatment	Asfaha et al.
15:00-15:05	2248	ReactorD: A python package for reactor design and simulation	Brandolin et al.
15:05-15:10	1569	Assessment of kinetically-limited regimes in lignin solvolysis through reaction-diffusion modelling	Garbarino et al.
15:10-15:15	2128	Continuous Bulk Processes for the Production of Rubber-Toughened Styrene Polymers Using Multifunctional Initiators: A Generic Mathematical Model.	Laganá et al.
15:15-15:20	1375	Comprehensive studies on the role of small aliphatic alcohols in the direct synthesis of hydrogen	Reinsdorf et al.
15:20-15:25	2965	The glycerol as raw material to an Argentinean biorefinery	Ferrari et al.
15:25-15:30	2053	Scientometric analysis of Fischer-Tropsch synthesis using alumina-supported cobalt catalyst	Ferrari et al.
15:30-15:35	2493	Hybrid solar/UVA reactor for continuous and cost-effective persulfate-based photo-Fenton treatment	de Albuquerque Brasil Santos et al.
15:35-15:40	2464	Open-loop dynamics of a parallel-plates reactor for ethanol steam reforming	Pedernera et al.
15:40-16:00		<b>Questions flash oral presentations</b>	
		<b>Coffee Break and Posters Discussion</b>	
16:00-16:30		<b>Plenary Conference</b>	
16:30-17:30		<b>Posters Discussion</b>	
17:30-18:30		<b>Congress Dinner</b>	



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### WCCE11-Area 2 CHEMICAL REACTION ENGINEERING AND CATALYSIS

#### Tuesday June 6, 2023 . POSTERS SESSION

1687	Upgrading of biomass-derived butanol to light olefins on Zn-Zr mixed oxides	Luggren et al.
1980	Modeling of the bivariate molecular weight distribution-copolymer composition	Herrero et al.
1988	Preparation of biodiesel from waste oil/soybean transesterification catalyzed by the basic ionic	Gallo García et al.
1993	Parallel computing as a tool for efficient modeling of the high-pressure polymerization of ethylene	Dietrich et al.
2006	Evaluation of HZSM-5 zeolite/synthetic carbon (HZ/Cs) composite behavior as catalyst for upgrading	Valle et al.
2052	Selective hydrogenation of nitriles to secondary imines over silica-supported metal catalysts	Agüero et al.
2125	Synthesis of bio-plasticizers derived from renewable organic acids and n-butanol by heterogeneous	Bedogni et al.
2157	Co-processing of the tar fraction in biomass pyrolysis liquids and VGO under FCC conditions	Pujro et al.
2219	Synthesis and application of core-shell-like Fe <sub>x</sub> O <sub>y</sub> @C nanoparticles in the removal of pollutants	Henriques et al.
2439	Levulinic acid obtention from lignocellulosic waste of agroforestry-industrial of different origins	Ruiz et al.
2460	2-furaldehyde oxidation employing transition metal-based catalysts	Ortenzi et al.
2477	Water gas shift reaction on Pt/Ce-TiO <sub>2</sub>	Cesário et al.
2546	Evaluation of the activity of K catalysts supported on zinc aluminate in the transesterification	Nunho Sousa et al.
2584	Optimization of the biocatalytic transesterification reaction of moringa oil using liquid lipases	Almeida et al.
2588	Comparative activity of natural and synthetic zeolitic catalysts for Glyphosate Photo-Fenton degradation	Ortenzi et al.
2656	Evaluation of ultraviolet radiation on the catalytic activity of cerium oxide	Roldão et al.



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### WCCE11-Area 2- CHEMICAL REACTION ENGINEERING AND CATALYSIS

*Wednesday June 7, 2023 . Oral presentations. Room 12*

9:00-9:15	1326	Towards new reactor technologies for biomass valorization by chemical reactions	Salmi et al.
9:15-9:30	1400	Effect of operational parameters on the gas composition from self-sustaining smoldering of biomass	Torres Brunengo et al.
9:30-9:45	1707	Comparison of Erythritol C-O hydrogenolysis in batch and continuous reactor on Ir-Re catalysts	Virgilio et al.
9:45-10:00	2612	Intensification of artificial photosynthesis reactions by exploring mesoscale channel geomet	de Toledo Cintra et al.
10:00-10:05	1977	Effect of variables on the water gas shift reaction.: Commercial catalyst	Poço et al.
10:05-10:10	1726	A Vaccination Model for the COVID-19 Pandemics – Analogy to a Chemical Reaction System	Torres et al.
10:10-10:15	1265	Effect of ultrasound on the mass-transfer in a parallel-plate electrochemical reactor under single	Colli et al.
10:15-10:30	<b>Questions flash oral presentations</b>		
10:30-11:00	<b>Coffee Break and Posters Discussion</b>		
11:00-11:30	<b>Posters Discussion</b>		
11:30-12:30	<b>Section Plenary</b>		
12:30-14:00	<b>Lunch Interval</b>		
14:00-14:15	2001	Kinetic model of CO <sub>2</sub> methanation in a microreactor under Power-to-Gas conditions	Fuentes et al.
14:15-14:30	1961	Chitosan production mediated by ionic liquid strategy and molecular insights	Dinh et al.
14:30-14:45	1792	Catalytic wetted wall reactor using deep eutectic solvent for reforming of volatiles from cellulose	Kudo et al.
14:45-15:00	1685	Catalyst development for the direct synthesis of Hydrogen peroxide with co-solvent enhanced	Schmidt et al.
15:00-15:15	1609	Two- and Three-Phase Variable Diameter Bubble Column Reactor – case studies: glycerol hydrochlorination	Medina et al.
15:15-15:30	1914	Continuous operation of photoreactor using magnetic nanoparticles under several types of LED	González-Rodríguez et al.
15:30-15:35	2387	Selective liquid-phase ketalization of glycerol with acetone to obtain solketal.	Duarte et al.
15:35-15:40	1661	Improved methane reforming by in-situ hydrogen separation with a cobalt-silica membrane	Ji et al.
15:40-16:00	<b>Questions Flash oral presentations</b>		
16:00-16:30	<b>Coffee Break and Posters Discussion</b>		
16:00-16:30	<b>Posters Discussion</b>		
17:30-18:30	<b>Plenary Conference</b>		
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### WCCE11-Area 2- CHEMICAL REACTION ENGINEERING AND CATALYSIS

#### Wednesday June 7, 2023 Poster Session

1219	Seawater disinfection by heterogeneous photocatalysis: application to aquaculture, bio-security	Blanchon et al.
1266	Application of ultrasound to improve the performance of a modified hydrocyclone for nickel powder electrochemical production	González Pérez et al.
1363	Development of 3D printed monoliths towards the catalytic oxidation of volatile organic compounds	Suarez-Vazquez et al.
1409	Modeling the dynamic behavior of fixed bed adsorbers by tank-in-series	Contreras et al.
1431	Study of the esterification reaction to produce propyl propanoate using ion exchange resins as catalyst	Velandia Barrios et al.
1436	Heterogeneous catalytic oxidation of furfural with hydrogen peroxide over a niobium catalyst	Perez Sena et al.
1476	Selective conversion of aromatic alcohols in almond-scented aldehydes on inexpensive ZnO/MnCO <sub>3</sub> catalysts.	Díez et al.
1480	Solvent effect on the kinetics of benzyl alcohol oxidation on ZnO/MnCO <sub>3</sub> catalysts	Zelin et al.
1489	Stochastic modeling of the grafting process of maleic anhydride onto polypropylene. A study of the influence of kinetic steps	Romero Pietrafesa et al.
1493	Amphiphilic Ionic Liquids: Developing Diels-Alder Reactions in Aqueous Micellar Systems	Adam
1667	Process intensification: Monolithic stirred reactor for the selective lactose oxidation	Regenhardt
1669	Obtaining value-added hydrocarbons by catalytic pyrolysis of waste tires using acid catalysts	Osorio Vargas et al.
1689	On the prediction of heat transfer in gas and liquid up-flow packed bed reactor	Taulamet et al.
1887	Zinc electrodeposition simulation in a rotating system	Goñi et al.
1934	Development of a catalytic and intensified process for recovery of carboxylic acids from black liquor	Reyes et al.
1953	Esterification of glycerin with fatty acids using KIT-6 acid catalysts	Vergara et al.
2194	La <sub>0.8</sub> A <sub>0.2</sub> MnO <sub>3</sub> (A = Ba, Sr) catalysts supported onto recycled TWCs for acetone combustion	De los Santos et al.
2887	Determination of Kinetic Parameters for Heterogeneous Reaction System Employing Discrete Element Methods under HPC Platforms	Estupinan A.A. et al.
2999	Evaluation of commercial silica drying pretreatment techniques in multipoint covalent immobilization of Eversa Transform 2.0	Soares et al.
3154	Process mechanism and kinetics of the reaction of sodium aluminate solution with carbon dioxide gas	Chengqian Zhang et al.



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### WCCE11-Area 2- CHEMICAL REACTION ENGINEERING AND CATALYSIS

*Thursday, June 8, 2023 . Oral presentations. Room 12*

<b>9:00-9:15</b>	<b>2354</b>	Plasma-assisted reforming of waste derived syngas for hydrogen production	Materazzi et al.
<b>9:15-9:30</b>	<b>2929</b>	Highly Sensitive Electrochemical Conversion of CO <sub>2</sub> into Formate using NiCo@rGO based Catalyst	Arsalan et al.
<b>9:30-9:45</b>	<b>2311</b>	Modeling a fluidized-bed photocatalytic reactor for VOC degradation	de Carvalho e Souza et al.
<b>9:45-10:00</b>	<b>1328</b>	Transient investigation of the epoxidation of light olefins on titanium silicate catalyst in a trickle	Alvear et al.
<b>10:00-10:15</b>	<b>2267</b>	Reductive amination of levulinic acid to produce pyrrolidones-derived compounds through Nickel	Araya et al.