



BUENOS AIRES 2023

JUNE 4 - 8

WCCE11 - 11th WORLD CONGRESS OF CHEMICAL ENGINEERING

IACCHE - XXX Inter-American Congress of Chemical Engineering

CAIQ2023 - XI Argentinian Congress of Chemical Engineering

CIBIQ2023 - II Ibero-American Congress of Chemical Engineering

Buenos Aires - Argentina - June 4-8, 2023

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



GS08-Global Symposium on CO₂ Conversion and Utilization

Monday, June 5th
Auditorium 2
(Ground floor)

PROGRAM

ORAL SESSIONS

SESSION 1. CO₂ CONVERSION AND UTILIZATION (I)

Chairs: *Ricardo Abejon, University of Santiago de Chile, Chile*
Jonathan Albo, Universidad de Cantabria, Spain

Monday, June 5th
Auditorium 2

ID1826 KEYNOTE	9:00-9:30	"Advanced photo(electro)chemical CO ₂ recycling technology—materials process to system design" <u>Pitchaimuthu, S.</u> <i>Heriot-Watt University (United Kingdom)</i>
ID1389	9:30-9:45	"Application of carbonic anhydrase in chemical CO ₂ absorption for Bioenergy with Carbon Capture Utilization and Storage (BECCUS)" <u>Antonopoulou, I.</u> ; Rova, U.; Christakopoulos, P. <i>Luleå University of Technology (Sweden)</i>
ID2470	9:45-10:00	"Sorption enhanced hydrogenation of CO ₂ with Ni/Al ₂ O ₃ catalyst and LTA 5A zeolite for synthetic natural gas production" Martínez-Visus, I.; Sanz-Martínez, A.; Durán, P.; Mercader, V.D.; Francés, E.; Herguido, J.; <u>Peña, J.A.</u> <i>Aragon Institute of Engineering Research (I3A), Universidad Zaragoza (Spain)</i>
ID2312	10:00-10:15	"Decarbonization of petrochemical industry by carbon utilization approaches: Sustainability of electro-ethylene implementation" <u>Fernandez-Gonzalez, J.</u> ; Rumayor, M.; Dominguez-Ramos, A.; Irabien, A. <i>Universidad de Cantabria (Spain)</i>
ID1463	10:15-10:30	"Tuning the syngas composition obtained via electrochemical reduction of CO ₂ by in situ potential cycling" <u>Azenha, C.</u> ; Pereira, A.M.V.M.; Mendes, A. <i>University of Porto (Portugal)</i>

SESSION 2. CO₂ CONVERSION AND UTILIZATION (II)

Chairs: *Cátia Azenha, Universidade do Porto, Portugal*
Natalia Quici, Universidad Tecnológica Nacional, Argentina

Monday, June 5th
Auditorium 2

ID2515 KEYNOTE	14:00-14:30	"CO ₂ methanation in a polytropic- distributed feed fixed bed reactor for biogas upgrading" Durán, P.; Aragüés-Aldea, P.; Francés, E.; <u>Peña, J.A.</u> ; Herguido, J. <i>Aragon Institute of Engineering Research (I3A), Universidad Zaragoza (Spain)</i>
ID2472	14:30-14:45	"PEI-impregnated microporous carbon materials obtained from cellulosic low-cost precursors for CO ₂ adsorption and conversion" <u>Lanús Méndez Elizalde, M.</u> ; Gennari, F.C.; Gasnier, A. <i>Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Centro Atómico Bariloche (CNEA) (Argentina)</i>
ID2651	14:45-15:00	"Infrastructure design for the operation of electric and hydrogen trucks in the soy supply chain in Argentina" <u>Verrengia, M.</u> ; Vecchietti, A. <i>Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) (Argentina)</i>

ID2918	15:00-15:15	"Photocatalytic CO ₂ conversion: sol-gel and aerosolization synthesis of Cu _x O-modified TiO ₂ over 3D printed supports" Pascual, J.; Altieri, T.; Lombardo, M.V.; Montesinos, V.N.; <u>Quici, N.</u> <i>Centro Tecnologías Químicas-UTN (Argentina)</i>
---------------	--------------------	---

SESSION 3. CO₂ CONVERSION AND UTILIZATION (III)

Chairs: **J.A. Peña, Universidad de Zaragoza, Spain**

S.E. Peña, Universidad de Guayaquil, Ecuador

**Monday, June 5th
Auditorium 2**

ID1368 KEYNOTE	16:30-17:00	"Continuous CO ₂ photoreduction using an optofluidic microreactor and Ce-based TiO ₂ nanocrystals" Merino-García, I.; Diego-Rucabado, A.; Espeso, J.I.; Valiente, R.; Cano, I.; Martín-Rodríguez, R.; Irabien, A.; de Pedro, I.; <u>Albo, J.</u> <i>Universidad de Cantabria (Spain)</i>
ID3128	17:00-17:15	"Study of the CO ₂ methanation reaction mechanism by in situ DRIFTS on Ni catalysts" Gonçalves, L.P.L.; Mielby, J.; Soares, O.S.G.P.; Lebedev, O.I.; Sousa, J.P.S.; Petrovykh, D.Y.; Kegnæs, S.; Kolen'ko, Y.V.; <u>Pereira, M.F.R.</u> <i>University of Porto (Portugal)</i>
ID1437	17:15-17:30	"Analysis of porous organic polymers and biopolymer-based mixed matrix membranes performance in CO ₂ /CH ₄ separation" Torre-Celeizabal, A.; Lozano, A.; <u>Abejón, R.</u> ; Casado-Coterillo, C.; Garea, A. <i>Universidad Santiago de Chile (Chile)</i>

SESSION 3. CO₂ CONVERSION AND UTILIZATION (III) (Cont.)

Chairs: **J.A. Peña, Universidad de Zaragoza, Spain**

S.E. Peña, Universidad de Guayaquil, Ecuador

**Monday, June 5th
Auditorium 2**

ID3142	18:30-18:45	"Flow characteristics of CO ₂ -TBAB/H ₂ O/PC gas-liquid flow in a microreaction system" Wu, Y.X.; <u>Wang, Y.D.</u> ; Chen, Z.; Xu, J.H. <i>Tsinghua University (China)</i>
ID2987	18:45-19:00	"Evaluación del mineral manganeso OXMN09 y OXMN09P en el proceso de Chemical looping Combustion (CLC) con residuos de corte de caña (RAC) utilizando Termogravimetría: Tecnologías de Captura de Dióxido de Carbono" <u>Peña, S.E.</u> ; Forero, C.R.; Velasco, F.; Arango, E. <i>Universidad de Guayaquil (Ecuador)</i>

POSTER SESSION

Monday, June 5th (COFFEE AREA) 10:30-11:00 h & 16:00 -16:30 h

ID1306	"Advances in the development of processes for the electrocatalytic reduction of CO ₂ to obtain formate in a continuous-mode" Díaz-Sainz, G.; Alvarez-Guerra, M.; <u>Irabien, A.</u> <i>Universidad Universidad de Cantabria (Spain)</i>
ID1307	"Single-pass production of high value-added carbon products by coupling the glycerol oxidation to the continuous CO ₂ electroreduction to formate" Fernández-Caso, K.; Peña-Rodríguez, A.; Solla-Gullón, J.; Montiel, V.; Díaz-Sainz, G.; <u>Albo, J.</u> ; Alvarez-Guerra, M.; Irabien, A. <i>Universidad de Cantabria (Spain)</i>
ID1327	"Perovskite-based photoanodes for solar-driven CO ₂ reduction to formate in gaseous phase" Abarca, J.A.; Díaz-Sainz, G.; Merino-García, I.; Albo, J.; <u>Irabien, A.</u> <i>Universidad de Cantabria (Spain)</i>
ID1399	"Decarbonizing the iron & steel industry: Future perspectives for a sustainable implementation of CO ₂ conversion" <u>Rumayor, M.</u> ; Fernandez-Gonzalez, J.; Dominguez-Ramos, A.; Irabien, A. <i>Universidad de Cantabria (Spain)</i>
ID1443	"Low carbon microfluidic separations" Fernández-Maza, C.; González-Lavín, G.; Gómez-Coma, L.; Fallanza, M.; <u>Ortiz, I.</u> <i>Universidad de Cantabria (Spain)</i>
ID1899	"Towards decarbonization of the energy sector. The role of Matrimid/ZIF mixed matrix membranes in hydrogen recovery" Moral, G.; Ortiz, A.; Gorri, D.; <u>Ortiz, I.</u> <i>Universidad de Cantabria (Spain)</i>
ID2171	"Low-carbon water splitting for hydrogen production" <u>Rivero, M.J.</u> ; Perez-Peña, E.; Ortiz, I. <i>Universidad de Cantabria (Spain)</i>
ID2740	"Selective utilization of Carbon dioxide as C1 and C2 source" Arata Badano, J.; Gastelu, G.; Dyson, P.J.; Gómez F.J.V.; <u>Uranga J.G.</u> <i>INFIQC-CONICET, Universidad Nacional de Cordoba (Argentina)</i>
ID2753	"Carboxylic acids as catalyst applied to O-formylation of alcohols using CO ₂ as C1 source" Gastelu, G.; Arata Badano, J.; Hulla, M.; Dyson, P.J.; <u>Uranga J.G.</u> <i>INFIQC-CONICET, Universidad Nacional de Cordoba (Argentina)</i>

ID2815	“CO ₂ hydrogenation to methanol on In ₂ O ₃ /ZrO ₂ fibrillar catalysts” García-Mateos, F.J.; <u>Valero-Romero, M.J.</u> ; Ruiz-Rosas, R.; Rosas, J.M.; Rodríguez-Mirasol, J.; Cordero, T. <i>University of Malaga (Spain)</i>
ID2909	“Waste-based geopolymers for CO ₂ capture” Freire, A.L.; Sánchez, S.N.B.; Humberto, J.J.; Castellón, E.R.; <u>Moreira, R.F.P.M.</u> <i>University of Santa Catarina (Brasil)</i>
ID2920	“CH ₄ -H ₂ mixtures production through thermochemical reaction between CO ₂ and MgH ₂ doped with Ni and CNTs” <u>Amica, G.</u> ; Gennari, F.C. <i>Comisión Nacional de Energía Atómica – CONICET (Argentina)</i>
ID2957	“Thermochemical reaction between MgH ₂ and Li ₂ CO ₃ to produce synthetic CH ₄ ” <u>Grasso, M.L.</u> ; Rozas Azcona, S.; Aparicio, S.; Gennari, F.C. <i>CONICET (Argentina)</i>
ID3088	“Decarbonization of water remediation by integrating electro-membrane processes” <u>Sampedro, T.</u> ; Gómez-Coma, L.; Ibañez, R.; Ortiz, I. <i>Universidad de Cantabria (Spain)</i>



Coordinator

Angel Irabien, Department of Chemical & Biomolecular Engineering,
University of Cantabria, Spain (ES)

Organized by:



Promoted and supported by:

