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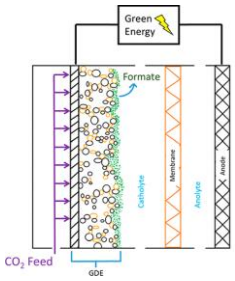
ELCOREL NEWS

ELECTROCHEMICAL CONVERSION OF RENEWABLE ELECTRICITY INTO FUELS AND CHEMICALS

*A Marie Sklodowska Curie Innovative Training Network (ITN) - **ELCoREL** – is supported by the European Commission to train the new generation of experts capable to develop and implement novel technologies capable of storage of renewable electricity into fuels and chemicals.*

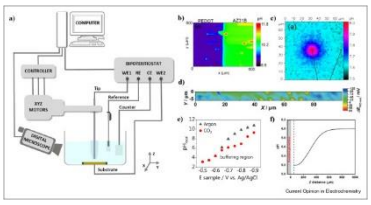
ELCoREL aims at both scientific and technological aspects of the storage of renewable electricity in fuels and chemicals. To meet this goal the ELCoREL consortium relies on the work of 14 Early Stage Researchers (ESR) who carry out research aiming at development of systematic knowledge supporting development of novel tailored catalysts meeting specific activity and selectivity targets for oxygen evolution and CO_2 reduction. The involvement of two industrial partners ensures rapid application of the fundamental science in electrochemical technology.

➢ Publications by our ESR fellows within the ITN

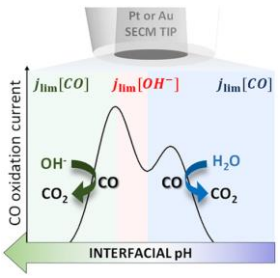


Active and Selective Ensembles in Oxide-Derived Copper Catalysts for CO_2 Reduction
Federico Dattila, Rodrigo García-Muelas and Núria López
ACS Energy Letters 2020, 5, 10, 3176–3184
https://pubs.acs.org/doi/10.1021/acsenergylett.0c01777

Optimizing the Electrochemical Reduction of CO_2 to Formate: A State-of-the-Art Analysis
Matthew F. Philips, Gert-Jan M. Gruter, Marc T. M. Koper, Klaas Jan P. Schouten
ACS Sustainable Chemistry and Engineering 2020, 8, 41, 15430–15444
https://pubs.acs.org/doi/10.1021/acssuschemeng.0c05215



Understanding the Voltammetry of Bulk CO Electrooxidation in Neutral Media through Combined SECM Measurements
Mariana C. O. Monteiro, Leon Jacobse, and Marc T. M. Koper
J. Phys. Chem. Lett. 2020, 11, 9708−9713
https://pubs.acs.org/doi/pdf/10.1021/acs.jpclett.0c02779



Measuring local pH in electrochemistry
Mariana C. O. Monteiro, Marc T. M. Koper
Current Opinion in Electrochemistry2021,25:100649
https://www.sciencedirect.com/science/article/pii/S2451910320301903

ELCOREL workshop ON-LINE in October 2020... "Industrial (Electro-) Catalysis"

Like the gamblers are waiting for the cold and heartless roulette ball to settle, the entire ELCOREL family was waiting whether the conference will be online or offline. Fortunately for us, it is a win in any case, although deprived of social interactions.
But even despite the lack of coffee during coffee breaks, the official part of the conference was held as usual at the highest level. We were pleased with the wide range of activities - from an interactive educational game to the details of industrial electrochemistry, completing with an in-depth lecture on the importance of the transition to a circular economy and what role we play in it, not only as scientists, but also as ordinary people.
The interactive educational game consisted of a small team, leading a company and developing a business plan for it. This made it possible to study both the vocabulary and tools in the field of entrepreneurship, and to feel for yourself what mistakes or victories chosen development scenario can bring. Bart van den Bosch told us about the stages that an idea goes through in order to turn into a working process in the industry. Julia L. Krasovic's presentation showed us how to scale up electrochemical processes. Finally, we were lucky to listen to a profound lecture from prof. Gert-Jan Gruter, about the role of chemistry in the environmentally friendly future.
We are all looking forward to the next meetings of the ELCOREL family and we hope that, albeit informal, but an offline meeting awaits us in the near future.

Vladislav Buravet

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 722614.

Paulina Pršlja

Paulina comes from Ljubljana the city of dragons, Slovenia. She is a PhD student under prof. Nuria Lopez at the Institute of Chemical Research of Catalonia, ICIQ. Her project focuses on detailed DFT calculations of CO_2 reaction pathways to CO and hydrocarbons with a single atom catalyst.

Would you like to tell something about studies and your Master thesis? I studied chemistry at the Faculty of chemistry and chemical technology at the University of Ljubljana. During my studies, I was focused on studying the properties of asymmetrical electrolytes using the Monte Carlo method. During my Master's studies, I collaborated with Rocasolano Physical chemistry institute, in Madrid, my research revolved on adsorption of water, methanol, and their mixtures in slit Graphite pores using Molecular Dynamic and grand-canonical Monte Carlo method.

What are you "doing" (scientific work) at the moment? My current research at ICIQ focuses on the redispersion of nanoparticles on carbon materials and understanding the selectivity and activity of those single-atom catalysts for the production of syngas, that can be reduced to hydrocarbons.

How is your experience from the secondment during this project? Last year I spend time in Avantium in Amsterdam, where I learned how to synthesize post-transitional metal based catalyst by chemical reduction, the catalyst was airbrushed on the Gas Diffusion Layers, and tested with cell assembly. I must add that Amsterdam is a vibrant and diverse place, I enjoyed living there.

What is your current location and how is life in a foreign country far from home and family?
Tarragona is wonderful, and the weather is nice through all the year. I live abroad for almost four years now, I like it but I do miss my family a lot.

What are your hobbies and interests? In my free time, I like to draw (something crafty) and sports like rock climbing.

What is your favorite color? Nude, white and black.

What is your favorite meal? My favorite dish is Bosnian potato pie (pita sa krompirom), and beef ribs.

What is your favorite drink? In the morning Turkish coffee, during the day water is ok.

What is your favorite music? I try to listen to everything (metal not so much). These days I listen to Olafur Arnolds and Rob Simonsen it helps while writing the thesis and papers.

What is your favorite place // city / destination / country? Except my city, I love Đakovo and Mareda(Istra), cities in Croatia. I have nice childhood memories from these places.

Anything else you would like to tell us?
I would like to say thank you for the opportunity to work in Elcorel ITN.
Be safe humans.

Thank you and all the best! KS

Davide Pavesi

Hello, my name is Davide Pavesi, from Italy. I am 30 years old and I am a PhD student within the International Training Network ELCOREL.

Would you like to tell something about studies and your Master thesis? I studied Industrial Chemistry at the University of Rome La Sapienza, both for my Bachelor of Science and my Master degree. I focused especially on the environment, and my Master thesis was about ground water purification using electroactive microorganisms as well as bioelectrosynthesis of useful materials from byproducts.

What are you "doing" (scientific work) at the moment? At the moment I am synthesizing and investigating catalysts for the electrochemical reduction of CO_2. With an industrial approach, I try to synthesize new catalysts with clean methods (better chance to be scaled up and more environmentally friendly) and screen their performance for my reaction of interest at high rates.

Your experience from the secondment during this project? During my first secondment at Aalto University I learned how to fabricate and operate polymer electrolyte membrane electrode assemblies. My second secondment, instead, was about computational methods for the investigation of catalysts using DFT. Sadly, I could not go to Tarragona due to the pandemic, but we manage to do it remotely, with the help of Federico!

How do you like the workshops and meetings organized within the Elcorel project? We had a lot of fun, we learned a lot and we met many wonderful people.

What is your current location and how is life in the foreign country far from home and family?
I currently live in Haarlem, The Netherlands. Life away from home can be challenging sometimes, especially when it's not easy to travel and meet family and old friends.

What are your hobbies and interests?
I like to read about anything that stimulates my curiosity, play guitar, plants and many others.

What is your favorite color? Definitely bright orange

What is your favorite meal? There is too much good food on the planet to pick a favorite

What is your favorite drink? A good red wine or a Negroni

What is your favorite music? I would say hard rock, heavy metal, grunge, gipsy jazz, swing, blues and a lot more. I can enjoy many types of music

What is your favorite place // city / destination / country?
Right now, writing during a pandemic as an expat, my favorite place is definitely home.
A small coastal town close to Rome in Italy.

What are your plans for the future?
I would like to keep doing research, possibly in the field of renewable energy.

Thank you and good luck! KS

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International Conference on ELECTROCATALYSIS

ON-LINE 29-31 March 2021

In the framework of our ITN "ELCOREL",
we are organizing an online conference focusing on the scientific and industrial aspects of the electrocatalytic CO2 reduction and oxygen evolution reaction.

Keynote speakers: **Angel Cuesta, Beatriz Roldán Cuenya, Maria Escudero-Escribano, Maximilian Fleischer, Nicola Marzari and Peter Strasser.**

Submissions for oral and poster presentations at http://event.elcorel.org/.

The posters will be presented in a form of short (5 minutes video) presentation.

Looking forward to see you in the conference.

Open for public! **Join us!**

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find interesting information, contribute the research, enjoy the science, enjoy life...

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ELCOREL

www.elcorel.org

Editor: Prof. Marc T. M. Koper, Leiden University

Contact: elcorel@jh-inst.cas.cz

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