

No. 5
2019

ELCOREL NEWS

ELECTROCHEMICAL CONVERSION OF RENEWABLE ELECTRICITY INTO FUELS AND CHEMICALS

A Marie Skłodowska 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 work of 14 Early Stage Researcher (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 CO₂ reduction. The involvement of two industrial partners ensures rapid application of the fundamental science in electrochemical technology.

European Researchers Night

...27th September, Barcelona – our ESR Fellow
Federico Dattila

Winner of the 1st prize at the „Barcelona Science Slam“
CONGRATULATIONS!

<https://twitter.com/FedeDat/status/1177707071749398528>

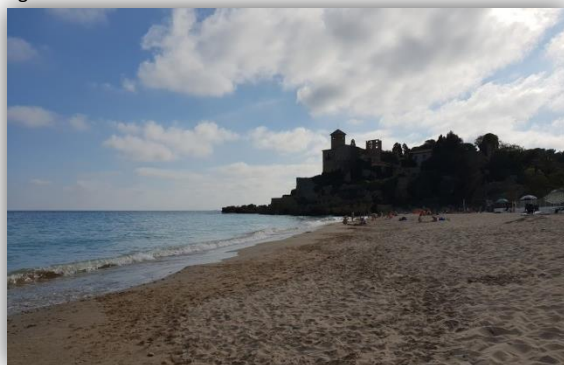
So happy people enjoyed @elcorelprague project and the sad love story between #CO₂, #protons and #electrons that much! Thanks @CRGenomica for the amazing organization! From Monday back on track on #CO₂reduction. I focused too few on research last month. #MSCANight



ELCOREL workshop & mid-term meeting in Altafulla near Tarragona in Spain in June 2019...

As already half of the project time has passed, we met again - this time in Spain - for the Summer School on “High-Performance Computing” organized by Prof. Nuria Lopez of ICIQ, which was open to the public as usual. The workshop took place from the 3.-5. June in the lovely seafont town of Altafulla in between Barcelona and Tarragona, where the ICIQ is located. The workshop was again focused on theory and the computational quantum mechanical modeling of systems. Lectures on the principals of density functional theory, molecular dynamics simulations, and statistical learning were accompanied by training in visualization and time-management. As many of us are now entering into the final year of our PhD program, these sessions on soft-skills were highly appreciated. But aside from lots of interesting talks we also had the great opportunity of hands-on DFT experience to try simulating a system of our own. Especially for the ESRs without any training in quantum mechanical simulations, this was a great way to see how theory can be used to calculate actual systems. The stimulating workshop was accompanied by a “Spanish” schedule for lunch and dinner times. The late hours were great to find some time for a quick swim in the Mediterranean Sea or a great view of the sunset on the beach. The summer school was followed by the Mid-term Review Meeting with the Project Officer. Each fellow presented their PhD project and it was great to see what has been achieved in the first half of the project, where collaborations are already successful and which new ones are about to be established. After an intense day of presentations and discussions we were rewarded with a great paella dinner by the sea. On Friday, this meeting’s group building activity was scheduled: This time it was sea kayaking which was enjoyed to a different extend by the participants, including an exciting ride with some loss of sunglasses and a carried boat. Afterward, we ended the workshop by either bathing in the sea, trying some stand-up paddling or just enjoying the last minutes of sun at a beach in Spain. The next project meeting will take place in Milan in January, organized by De Nora Industries which will give us an insight into electrocatalysis at an industrial scale. We look forward to meet in Italy!

Text by Rebecca Katharina Pittkowski (Heyrovsky Institute),
Photo by Klaudiv Soukupová (Elcorel)



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

WE INTRODUCE...

Tugce Kutlusoy

is a PhD student of theoretical chemistry in the Jan Rossmeisl group at the Department of Chemistry at Copenhagen University. Her research focuses on rational design of complex oxide materials for electrocatalytic for oxygen evolution. She obtained her BA in chemistry in 2013 and MA in organic/polymer chemistry in 2016 at Marmara University, Istanbul, Turkey, and worked as a teaching assistant in the organic laboratory at Marmara University and seconded as a visiting researcher at Complutense Madrid University, Madrid, Spain before joining Elcorel.

Would you like to tell something about your studies and your Master thesis? I have studied chemistry and my master focused on polymers under organic chemistry department. My project was about synthesis of biopolymers for tissue engineering. While my master degree I had some course based on theoretical chemistry as well. In the meantime I made acquainted with DFT calculations and then it led to do my PhD on this area.

What are you "doing" (scientifically) at the moment? In September I came back from my external stay (from Milan). My main project is based on DFT, but I had great experience in lab in De Nora for three months. I synthesized a set of perovskites for OER.

How about your experience from your actual position in the Elcorel ITN at the University of Copenhagen?

First of all, it is a privilege to be ELCOREL Fellow. We have a great opportunity to improve us in many ways. University of Copenhagen is also well-organized place and we have wonderful colleagues and we have good relations. On Fridays we have group meetings and we share our ongoing projects and we have always good feedback for future works. We had also journal club which helped us to be updated about recent works in our scientific area.

We are interested in your impressions from your recent Secondment at DeNora in Italy (the place of our next workshop).

After a long break as a chemist, I had new lab experience in Milan. I have worked on OER and I got great help both scientific knowledge and lab experience. We had good collaboration and I had new perspective about my project.

How is life far from home and family?

Since I started university I am always far from home. We got used to it. As long as I have a time for vacation I visit them and we have always great time after a long break.

What is your favorite color?

I love all colors but my favorite is blue.

What is your favorite meal?

Pizza. That's why it was amazing to be in Italy for a couple of months.

What is your favorite city / destination / country?

I like to travel a lot. As long as I have time for weekends I love to visit and experience new countries. Copenhagen is like my home now. But I had great time in Italy and I visited amazing coasts during summer time. Except for them my dream and favorite country was Iceland. It has a really unique and picturesque landscape.

Thank you and good luck! (ks)



DJ Donn Matienzo

is currently a junior researcher at Industrie De Nora (Italy). He was awarded with the Erasmus Mundus Master in Chemical Innovation and Regulation (EMMC-ChIR) in 2017 where he did the coursework at the Alma Mater Studiorum - Università di Bologna and defended the Master's thesis at the Universitat de Barcelona.

Would you like to tell something about studies and your Master thesis?

My previous studies involved synthesis, characterization and catalytic activity testing of nanocrystalline materials for the reverse water-gas shift reaction. The study focused in the use of recovered CO₂ from biochemical processes (in which CO₂ is being produced as a by-product). In this manner, these processes would not contribute further to the increasing global CO₂ emissions.

What are you "doing" (scientific work) at the moment?

Hydrogen (H₂) is one of the promising solutions for sustainable and green energy problem. One of the most efficient ways of producing H₂ at low cost and high purity is the electrochemical water splitting into H₂ and O₂. My PhD studies is about the synthesis and characterization of electrocatalysts to be integrated into anodes for water splitting.

Tell us what is your experience from the actual Secondment at the Heyrovsky Institute in Prague?

It's a different kind of experience working in a research institute. It somehow changed my point-of-view on research. I like the idea that everyone in the research group is willing to collaborate and to help you in any circumstances. Additionally, I'm able to attend a course in Electrochemical Engineering which is a great opportunity to learn.

How is life in Prague?

I've been to Prague several times and every time is a different kind of experience. Once, I was able to see the historic gateway and the next time I discovered the ornamentation on the façade of a Baroque house. But living in Prague is another thing. Surely, Prague has its own magic that could bring you back in time.

How is life far from home / family?

I've been living in Europe for 4 years (thousands kilometer away from my home and my family) but I could say that working or living in another country is a life-changing experience. Living far from home gave me the chance to experience first-hand various cultures and practices. It also gave me the opportunity to learn a new language.

What are your hobbies and interests?

I love to travel a lot. But I also like watching TV series and movies during my free time.

What is your favorite color?

Green. Because I want to promote green chemistry and sustainability.

What is your favorite meal?

Adobo, our very own Filipino dish of pork or chicken marinated in a sauce containing vinegar and garlic, browned in soy sauce and simmered in marinade. Its unique taste could bring me back home.

What is your favorite drink?

Either tea or coffee, it's the caffeine kick why I choose these beverages.

What is your favorite city / destination / country?

London, Paris and Toronto are the top cities on my list.

Anything else you would like to tell us?

I'm grateful and happy to be a part of the ELCOREL project. Science combined with nice people with different cultural background makes it more exciting. I'm looking forward to the next ELCOREL workshop and network meetings.

Thank you and good luck! (ks)



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

ELCOREL
Newsletter No. 5
page 2

Join us for the next workshop!
...this time in Italy! ...open for public!



"Material Aspects of Contemporary (Electro-) Catalysis"

workshop in Milan, Italy (DeNora Industries) 27–29(31) January 2020

SPEAKERS: Stefano Agnoli (Associate professor at University of Padova)
 Marco Faustini (Associate Professor at Sorbonne University)
 Piero Torelli (Researcher at CNR-IOM and at APE beamline - ELETTRA synchrotron)
 Graziano Marcuccio (Chief Human Resources Officer at Industrie De Nora)
 Gianluca Fazio (Technology Intelligence Specialist at Industrie De Nora)
 Emanuele Instuli (Senior Scientist at Industrie De Nora)

WORKSHOP PACKAGES – REGISTRATION FEES (Prices including hotel reservation)

ELCOREL Workshop & Meeting – for members only:
 ELCOREL ESR fellows, shared rooms (whole week, 4 nights Mo-Fri) € 325,- per person
 ELCOREL senior members, single rooms (whole week, 4 nights Mo-Fri) € 493,- per person
ELCOREL Workshop – open for public:
 Other participants in shared rooms (2 ½ days, 3 nights Mo - Thu) € 268,- per person
 Other participants in single rooms (2 ½ days, 3 nights Mo - Thu) € 394,- per person
 Venue: <https://www.hilton.com/en/hotels/milgigi-hilton-garden-inn-milan-north/>



**...FURTHER
 TRAINING EVENTS**

- Material Aspects of Contemporary (Electro-) Catalysis (DeNora Industries)
- Summer School on Electrochemical Engineering and Catalysis-related Energy Applications (Aalto University)
- Industrial (Electro-) Catalysis (Avantium Chemicals)

REGISTRATION on-line > <http://elcorel.org/events.php>



PROGRAM

VENUE

Monday 27th January

10.30 – 12.30 Registration
 12.30 – 14.30 Lunch
 14.30 – 15.30 20 materials as Electrocatalysts (Stefano Agnoli)
 15.30 – 16.00 Coffee Break
 16.00 – 17.00 20 materials as Electrocatalysts (Stefano Agnoli)
 17.00 – 18.00 Innovation session (Emanuele Instuli)

Tuesday 28th January

09.00 – 10.00 Sol-gel synthesis for electrocatalysts (Marco Faustini)
 10.00 – 10.30 Coffee Break
 10.30 – 11.30 Sol-gel synthesis for electrocatalysts (Marco Faustini)
 11.30 – 12.30 Innovation session (Gianluca Fazio)
 12.30 – 14.30 Lunch
 14.30 – 15.30 Photoemission from basic to advanced experiments (Piero Torelli)
 15.30 – 16.00 Coffee Break
 16.00 – 17.00 XAS from UHV to Ambient Pressure XAS: bridging the pressure gap (Piero Torelli)

Wednesday 29th January

09.00 – 10.00 how to succeed on the job market
 10.00 – 10.30 Coffee Break
 10.30 – 12.30 how to succeed on the job market
 12.30 – 14.30 Lunch
 14.30 – 15.30 Visit R&D DeNora
 15.30 – 16.00 Coffee Break

<https://www.hilton.com/en/hotels/milgigi-hilton-garden-inn-milan-north/>

**Ciao
 in
 Milan!**



MERRY CHRISTMAS & HAPPY NEW YEAR 2020

SCIENCE ON/OFF SOCIAL MEDIA...

...get connected with us and our members, visit our website, find interesting information, contribute the research, enjoy the science, enjoy life...



<https://www.facebook.com/elcorel/>
<https://twitter.com/elcorelprague>



www.elcorel.org

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

Contact: elcorel@jh-inst.cas.cz



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

ELCOREL
 Newsletter No. 5
 page 3



**...the impressions
 from Spain**

