

No. 4

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.



Are you interested in Oxygen Evolution? Check this!

...new publication of our ESR fellow **Rebecca Pittkowski**

Ruthenium and Iridium Pyrochlores with Different Lanthanides as Catalysts for Oxygen Evolution

(Rebecca Pittkowski; Daniel F. Abbott; Roman Nebel; Thomas J. Schmidt; Ivano E. Castelli; Petr Krtil)

<https://zenodo.org/record/2789641#.XOed7RYza70>

Rationality in the new oxygen evolution catalyst development

(Rebecca Pittkowski, Petr Krtil, Jan Rossmeisl <https://www.sciencedirect.com/science/article/pii/S2451910318302163>)



ELCOREL workshop & consortium meeting at the Chateau Liblice in January 2019...

From January 27th to February 1st we gathered again for the third ELCOREL workshop and meeting at the beautiful Liblice castle in Czech Republic, lovely place away from the distractions of the city, to fully immerse into the topics of this meeting, which was focused on Surface Electrochemistry and Spectroscopy.

During the first three days, as usual, the ELCOREL ESRs were joined by others to take part in the winter school which focused on several techniques that can be used to probe and characterize surfaces and the interaction of these surfaces with adsorbates and electrolytes. X ray absorption, IR and XPS just to name some. There was a great deal to be learned on the fundamentals and applications of the techniques from the speakers.

The third day, after the end of the workshop, it was time to do some “scientist hunting” in Prague. The ELCOREL people were challenged to find plates, statues and epitaphs related to great personalities in science that passed by or stayed in Prague. Nice way to learn some history and do some proper sight-seeing of the beautiful Czech capital.

As usual, during the last two days, it was time for us to present our progress. Aside from the interest in the evolution of each other's project, it was really nice to see that the first exchanges had started taking place, as people talked about their secondments and collaborations with other partners.

And now it's my turn. A few days after the end of the meeting I started my secondment at Aalto University leaving behind my usual location in Amsterdam, and writing these few lines from Finland. Our next stop will be Spain. Stay tuned!

Text by Davide Pavesi (Avantium Chemicals), Photo by Klaudiv Soukupová (Elcorel)



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WE INTRODUCE...

Mariana Cecilio de Oliveira Monteiro

I come from Brazil and started my Bachelor in Chemical Engineering there. In 2013 I was awarded a CNPQ - Science Without Borders Scholarship and moved to The Netherlands to finish my studies in the University of Groningen. There, I wrote my thesis in the group of Prof. F. Picchioni on polymeric amines. During my period in The Netherlands I worked in the starch industry Avebe, optimizing paper surface sizing solutions. I continued my education with a master study in Advanced Materials and Processes at the Friedrich-Alexander University Erlangen-Nürnberg, Germany, with specialization in Nanomaterials and Advanced Processes. In Erlangen, I also worked for 1.5 years as research assistant in LKO on the corrosion behaviour of pipeline materials and in CRT on high temperature heterogeneous catalysis.

Mariana, tell something about your studies and Master Thesis please. I did my Masters in Advanced Materials and Processes at the Friedrich-Alexander University Erlangen-Nürnberg, Germany, with specialization in Nanomaterials and Advanced Processes. MAP is a multidisciplinary program part of the [Elite Network of Bavaria \(ENB\)](#). It was a very interesting and challenging curriculum, which gave me the chance to broaden my knowledge and increase my interest in research. I concluded my master studies in the Chair of Surface Science and Corrosion with a thesis entitled "Boosting anatase surface reactivity towards carboxylic acid anchor groups".

What are you working on right now? Since 2017 I am an Early Stage Research (ESR) in the group of Prof. M. T. M. Koper, at Leiden University. My PhD focuses on the electrolyte effects in electrochemical reactions as hydrogen evolution and CO₂ reduction. I am also working on the development of a scanning electrochemical microscope and sensors for probing pH gradients during electrochemical reactions.

What is your experience from teaching? I like teaching and supervising students, especially due to the fact that I learn a lot when trying to answer their questions. I also think that these activities require a lot of planning and time management, it is a good way to train and improve organizational skills in general.

How is life in Leiden / Netherlands and how long are you there? I have lived in Leiden for nearly 2 years now (2nd time I live in the Netherlands). The city is lovely, and small enough to have a very cozy atmosphere. I especially enjoy the cycling routes around Leiden and the fact that we are so close to the beach.

How is life far from home and family? I haven't lived in Brazil for a long time already, I am used to it and I enjoy my life abroad a lot.

What are your hobbies and interests? I love cooking and cycling. **What is your favorite drink?** Wine **What is your favorite music?** Jazz **What is your favorite city / destination / country?** Anywhere with water around **Anything else you would like to tell us?** I am very much looking forward to the next Elcorel workshop in Spain! **Thank you and good luck!** (ks)



Spyridon Divanis

Spyridon Divanis is a PhD student and Marie Curie fellow at the University of Copenhagen (2017-today), who studied Physics at the University of Ioannina with focus in atomic and molecular physics. Then he continued his postgraduate studies at the chemistry department of the University of Ioannina in the field of quantum chemistry. His research activities right now are focused on the design of new catalysts for the Oxygen Evolution Reaction.

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

I've studied physics at the Physics department of University of Ioannina at Greece, where I got familiar with atomic, molecular and laser physics during the preparation of my bachelor dissertation and then moved to the Chemistry department of the University of Ioannina where I got introduced to the field of theoretical quantum chemistry and environmental chemistry.

What are you working on right now?

I'm synthesizing, characterizing and testing electrochemically perovskites, that could oxidize water more efficiently.

How is your experience from the actual Secondment at the Heyrovsky Institute in Prague?

It's my first time working in a lab, so I am enjoying it very much. Everybody in the lab is very helpful and patient enough to teach new things to a theoretician like my self and how to safely move around the laboratory. The supervision and guidance from Dr. Petr Krtil among with the experiments helped me enhance my electrochemical intuition and gain a better understanding of the scientific problems that we are facing.

How is life in Prague?

You can understand how fairy tales are written when you walk at the old town of Prague. The architecture is impressive and you certainly having the feeling that you are not any more at the year 2019 but during the era of the Kings and Knights but then the nightlife of Prague brings you back to nowadays.

What are your hobbies and interests?

Riding my motorcycle, sports, beer brewing and listening to music.

What is your favorite color?

Can't decide between black and red.

What is your favorite meal?

Also can't decide between roasted lamb and grilled fish.

What is your favorite drink?

Number one is Beer by far from the second one that is Tsipouro (Greek spirit)

What is your favorite music?

Metal music

What is your favorite city / destination / country?

Copenhagen, London, Greece respectively

Thank you and good luck! (ks)



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



"High Performance Computing"

workshop in Altafulla (Tarragona) 3-5/7 June 2019

SPEAKERS: Dr. R. García Muelas, Prof. N. López, Prof. J. Rossmeisl,
 Dr. J. M. Pruneda, L. Chico, Dr. A. Monleón, Prof. R. Guimerà,
 Prof. M. Sales-Pardo, Dr. F. Cucchietti, D. Vicente

WORKSHOP PACKAGES – REGISTRATION FEES (Prices including hotel reservation)

ELCOREL Workshop – open for public:

Other participants in shared rooms (2 ½ days, 3 nights Mo - Thu)

€ 355,- per person

Other participants in single rooms (2 ½ days, 3 nights Mo - Thu)

€ 395,- per person

ELCOREL Workshop & Meeting – for members only:

ELCOREL ESR fellows, shared rooms (whole week, 4 nights Mo-Fri)

€ 420,- per person

ELCOREL senior members, single rooms (whole week, 4 nights Mo-Fri)

€ 480,- per person

Venue: www.altafullamarhotel.com



...FURTHER TRAINING EVENTS

- High Performance Computing (Institute of Chemical Research of Catalonia - ICIQ)
- 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 till 25 May 2019 > <http://elcorel.org/events.php>



PROGRAM

VENUE

<https://www.altafullamarhotel.com/>

Monday 3rd June

15:00 – 17:00

DFT Principles

Dr. R. García Muelas /
 Prof. N. López, ICIQ

17:30 – 19:30

Hands On

Municipal House
 Vila Lanna
 Chateau Liblice

Tuesday 4th June

08.30 – 10.30

DFT Electrochemistry/ Volcanos

Prof. J. Rossmeisl, KU

11.00 – 13.00

MD Transport Siesta

Dr. J. M. Pruneda, ICN2

15:00 – 17:00

Hands On

17:30 – 19:30

Time-Management

L. Chico /
 Dr. A. Monleón, ICIQ

Wednesday 5th June

08.30 – 10.30

Statistical Learning

Prof. R. Guimerà /
 Prof. M. Sales-Pardo, URV

11.00 – 13.00

Visualization skills

Dr. F. Cucchietti, BSC

15:00 – 17:00

Supercomputing BSC

D. Vicente, BSC

17:30 – 19:30

Hands On



...the impressions from Prague



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



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<https://twitter.com/elcorelprague>



www.elcorel.org

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