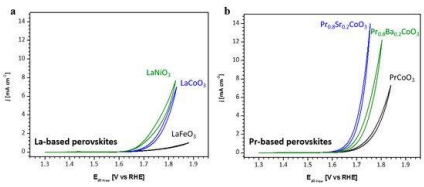
*A Marie Sklodowska Curie Innovative Training Network (ITN) - **ELCoREL** – is supported by the European Commission to train the new generation of experts capable to develop and implement novel technologies capable of storage of renewable electricity into fuels and chemicals.*

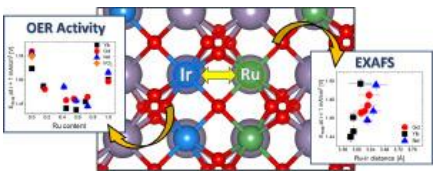
ELCoREL aims at both l scientific and technological aspects of the storage of renewable electricity in fuels and chemicals. To meet this goal the ELCoREL consortium relies on work of 14 Early Stage Researchers (ESR) who carry out research aiming at development of systematic knowledge supporting development 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.

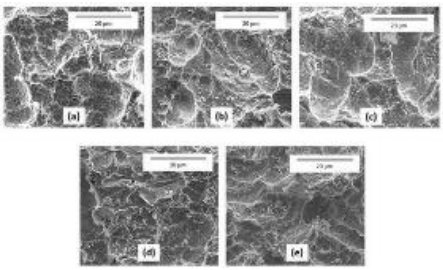
Publications by our ESR fellows within the ITN



Benchmarking Perovskite Electrocatalysts' OER Activity as Candidate Materials for Industrial Alkaline Water Electrolysis
DJ Donn Matienzo, Tuğçe Kutlusoy, Spyridon Divanis, Chiara Bari, Emanuele Instuli
Catalysts 2020, 10(12), 1387
https://www.mdpi.com/2073-4344/10/12/1387

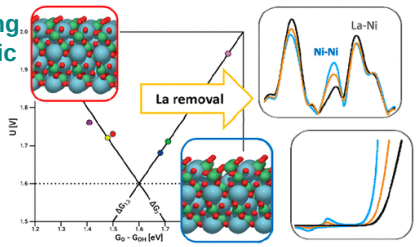
Synergistic effects in oxygen evolution activity of mixed iridium-ruthenium pyrochlores
Rebecca K. Pittkowski, Daniel F. Abbott, Roman Nebel, Spyridon Divanis, Emiliana Fabbri, Ivano E. Castelli, Thomas J. Schmidt, Jan Rossmeisl, Petr Krtil
Electrochimica Acta, Volume 366, 10 January 2021, 137327
https://www.sciencedirect.com/science/article/pii/S0013468620317205?via%3Dihub





Active IrO2 and NiO Thin Films Prepared by Atomic Layer Deposition for Oxygen Evolution Reaction
DJ Donn Matienzo, Daniel Settipani, Emanuele Instuli, Tanja Kallio
Catalysts 2020, 10(1), 92
https://www.mdpi.com/2073-4344/10/1/92

Engendering Unprecedented Activation of Oxygen Evolution via Rational Pinning of Ni Oxidation State in Prototypical Perovskite: Close Juxtaposition of Synthetic Approach and Theoretical Conception
Rebecca Pittkowski, Spyridon Divanis, Mariana Klementová, Roman Nebel, Shahin Nikman, Harry Hoster, Sanjeev Mukerjee, Jan Rossmeisl, Petr Krtil
ACS Catalysis ACS 2021, 11, 2, 985–997
https://pubs.acs.org/doi/10.1021/acscatal.0c04733



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.

WE INTRODUCE...

ELCOREL

ESR fellows

Chunmiao Ye

Hello everyone, my name is Chunmiao Ye, come from China. I'm currently a 4th year PhD under Prof. Marc Koper in Leiden University. My project focuses on electrochemical CO_2 reduction to HCOOH/CO on (modified) metallic catalysts.

Would you like to tell something about studies and your Master thesis? I did my bachelor and master both in University of Science and Technology in China. My studies over there open my world to electrochemistry in renewable energy, and also make me realize how important to know the mechanism behind, which motivated me to find a PhD position in a research group focus on fundamental study.

What are you "doing" (scientific work) at the moment? I'm currently working on cation effect on the activity and selectivity of electrochemical CO2 reduction to HCOOH/CO on Pd surface.

Your experience from the secondment during this project (if applicable)? Working in University and company are quite different. We are trying to learn things "new" in University, while apply existing research to industrial scale in company. I think it's a good chance to help PhDs realize the difference between academic and industrial life, which might help us to make better career decisions later.

How do you like the workshops and meetings organized within the Elcorel project? Workshops and meetings offer me a great chance to know people and their work in our field, and also offer many chances to communicate with some excellent researchers. Communicating with them really helps me to have a comprehensive understanding of myself and my work, which guides me to my current situation.

What is your current location and how is life in the foreign country far from home and family? Leiden, Netherlands. Managing life without family members and friends around is indeed very challenging, but also a great opportunity to experience different lifestyle.

What are your hobbies and interests? Reading books, having outdoor activities

What is your favorite place // city / destination / country? Leiden, Netherlands

What are your plans for the future? Keep healthy, work hard, contribute to the society

Anything else you would like to tell us? It's my first time to study (or work if you consider PhD is a job) abroad. Life far away from home never comes easy, but really help me to know more about the world I never knew before. Therefore, I'm very grateful to be one of PhDs in ELCOREL project, and glad to meet and share my PhD life with all of my colleagues.

Thank you! KS

Vladislav Buravet

Vlad is a PhD student at the J. Heyrovsky Institute of Physical Chemistry in the group of Doc. Dr. Petr Krtil. Vladislav obtained Master's degree in the field of coordinative chemistry in the Moldova State University. He spent several years as a junior scientific researcher in the Institute of Applied Physics, Academy of Sciences of Moldova.

Would you like to tell something about studies and your Master thesis? After my bachelor's degree, I had no plans to continue studying. First stage of education was organized in such a way that it was not clear why to continue. Quite by chance, I was lucky enough to get into the Institute of Applied Physics in the laboratory dealing with electrochemistry. I was engaged in electrochemical deposition of alloys, namely Co-W. It was only there that I became really interested in science and especially fell in love with electrochemistry. My colleagues were mostly scientists in the 60s who had gone through the Soviet school. With them, I began to study not in the form of lectures, but in the framework of enthusiastic daily conversations. That is how science became for me a form of entertainment that I wanted to be my vocation.

What are you "doing" (scientific work) at the moment? Like many people at ELCOREL, I am tackling the carbon dioxide reduction problem. In my case, this is a study of how the reaction behaves on certain types of materials - titanium oxides and sulfides, depending on the surface of these materials. But to be honest, most of the time is learning and structuring information in my head.

How do you like the workshops and meetings organized within the Elcorel project? I really love the workshops organized within the project. When I was at school, there were books about Harry Potter published and my generation grew up on them. All our meetings were reminding me studying at Hogwarts - we had lectures in ancient castles with the most talented mentors. Their knowledge and skills amazed me no less than magic. But they were even better because they are real and aimed at making a better world for all of us.

What is your current location and how is life in the foreign country far from home and family? I am living with my family (wife and daughter) in Prague, Czech Republic. Therefore, I don't feel that I am far from family. It is true that I miss my parents and grandparents, especially now in the times of COVID-19, when travelling is restricted. I am more worried that I don't communicate enough with my grandparents and don't see how my cousin grows up. But luckily internet allows us to chat every day. I mostly miss my friends and collaboration with them. Life in Czech Republic is adorable, I like people here and feel connection with them much more than with people back in Moldova. Also, Prague is quite big and it is easy to find activities to match my interests. The other important think we admire here is nature and landscape – cycling and hiking here is a big chunk of my free time.

What are your hobbies and interests? I have many of them. It depends from year to year what do I do more. Probably mostly I enjoy music. Guitar takes most of my free time in winter. I also started to learn to play piano and drums here in Prague. When it was winter and my wife was pregnant, I tried to be quiet and was lacking some physical activities, so I have learned to juggle. In summer it is mostly cycling and hiking. I also love learning something new and very often I just watch lectures about something I am interested in. This winter it was a lot of programming.

What is your favorite color? In chemistry definitely green. As with hobbies, it depends from year to year what do I resonate more. Probably blue and green are more frequent among them.

What is your favorite drink? Peach juice.

What is your favorite music? I don't restrict myself to a particular genre. If music resonates with my mood it is already enough. However, I like when there is something interesting in music. Most often I can find that in jazz – polyrhythms, modal construction, syncopations it's all very joyful to learn and listen. If I can recommend something to try from my absolute golden collection, I would suggest "My favorite things" by John Coltrane and "So what" by Miles Davis.

What is your favorite place // city / destination / country? This summer we discovered Orlik Dam and when we had the opportunity we went there to swim and relax. This place evokes the warmest memories of the last summer, so I decided to tell you about it.

What are your plans for the future? It is very simple – to get a PhD.

Anything else you would like to tell us? I would like to thank the ELCOREL project. Organizers, Supervisors, ESR, and lecturers. For a great opportunity to get involved in the world of big science, for multiculturalism and open-mindedness. These have been three happy years. Thank you!

Thanks and good luck! KS

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The ELCOREL International Conference on ELECTROCATALYSIS FOR RENEWABLE ENERGY

At the end of March, the "International Conference on Electrocatalysis for Renewable Energy" organized by a committee of ELCOREL fellows and Marc Koper from Leiden University took place - due to the still ongoing pandemic it was organized online. The conference featured a broad range of topics on both the oxygen evolution reaction and CO_2 conversion. With speakers and participants from both academia and industry, all aspects of the ELCOREL project were represented: from theoretical modelling and fundamental studies on these reactions to the cell design for industrial applications. The highlights of the program were six excellent keynote lectures that were given by Beatriz Roldan Cuenya (Fritz-Haber-Institut, Berlin), Peter Strasser (TU Berlin), Angel Cuesta (University of Edinburgh), Nicola Marzari (EPFL), Maximilian Fleischer (Siemens Energy), and Maria Escudero-Escribano (Copenhagen University).

The live presentations throughout the three days provided a great opportunity for discussion with the audience, which was used extensively, especially after the keynote lectures. Also, the poster presentations gave plenty of room for dialogue between scientist from all aspects of the field. The conference overall provided a good way of communication between scientist from various backgrounds, which is sadly often limited due to the current travel restrictions. All in all, with more than 120 participants the three days of online conference were full of lively discussion and scientific exchange. Thanks to the superb organizing committee, the whole conference took place without any technical difficulties and the overall feedback was very positive. The most frequent comment we heard was: "I haven't been to a conference with such good time keeping in a long time".

Text by Rebecca Katharina Pittkowski

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