



March 2019

Research Success Story



CROSSING BORDERS TO NURTURE EXCELLENCE

The Horizon 2020 project “BiomCatOx” (Biomimetic Dicopper Architecture for Catalytic Oxygen Activation) has two purposes. First, it is developing sustainable processes to transform natural resources for industrial use. Second, by bringing together a French post-doc and a Swiss research group, it offers training and mobility for the post-doc and cross-border/sector exchange of expertise for the research group.

Turning natural raw materials (e.g., petroleum) into value-added products can be time-consuming, polluting, costly in energy and wasteful. BiomCatOx, a project at the University of Bern, is working on a better method of synthesis inspired by natural enzymatic processes. “It’s a new concept for transforming materials using dioxygen as a mild oxidant,” explains Nathalie Ségaud, the post-doctoral researcher who was awarded a Marie Skłodowska-Curie Individual Fellowship to fund the project. “Our approach will provide a strict control on the reactivity of the process and will improve the efficiency of the synthetic catalyst. The applications could be broad.”

Pure science with real uses

One of these applications is the better use of our dwindling reserves of fossil fuels, explains Martin Albrecht, professor of inorganic chem-

istry and supervisor of the project. “With fossil fuels, there is always a component that cannot be used. Instead of burning it off, we want to transform these components so they can be used as alternative fuel or as building blocks for pharma, agrochemicals, plastics and the like. BiomCatOx will provide technology that the fine chemical industry can pick up and make happen.”

“Euresearch helps you build a stronger proposal.”

Strong team effort

Applying for the fellowship was Ségaud’s idea, who then worked with Albrecht on the concept. The Individual Fellowships are highly competitive grants. “You need to find a strong host group so that you have the right support,” says Ségaud. Albrecht, who is involved

in other prestigious EU projects and hosts another Marie Skłodowska-Curie Fellow, was an excellent fit. “The fellowship also financed a secondment in Prof. Francesca Paradisi’s lab at the University of Nottingham (UK), where I received complementary training essential to the project. By the end of the fellowship, I will have gained a unique skill set to boost my career. Ségaud advises applicants to take the time to build up a strong case, both in terms of science and the impact on their career goals. And she advises getting expert advice in writing the application. Euresearch offered a workshop and writing guide, and helped with the online forms. “They provided feedback on the proposal that made it a better fit for evaluation. Euresearch helps you build a stronger proposal.”

About BiomCatOx



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Dr Nathalie Ségaud
Fellow

Prof. Dr Martin Albrecht
Supervisor
Department of Chemistry
and Biochemistry, University
of Bern

CONTENT SUMMARY

The BiomCatOx project is developing a new and better concept for transforming natural raw materials into value-added products. Inspired by natural enzymatic processes, it aims to use Earth-abundant metals (e.g., copper) as catalysts to oxidise raw materials into products for industrial use, in a process that can be tailored and optimised.

FACTS AND FIGURES

Project Name
Biomimetic Dicopper Architecture for Catalytic Oxygen Activation

Research Area
Synthetic Chemistry /
Bio-inorganic Chemistry

Organisations
University of Bern (host),
University of Nottingham
(secondment)

Start Date – End Date
01.03.2018 – 29.02.2020

Duration
24 months

Project Cost
€175,420

Project Funding
€175,420

Programme
Horizon 2020 Excellent Science: Marie Skłodowska-Curie Individual Fellowships

More Information
<https://cordis.europa.eu/project/rcn/213992/>

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Euresearch · Effingerstrasse 19 · CH-3008 Bern
Phone +41 31 380 60 00 · info@euresearch.ch · www.euresearch.ch