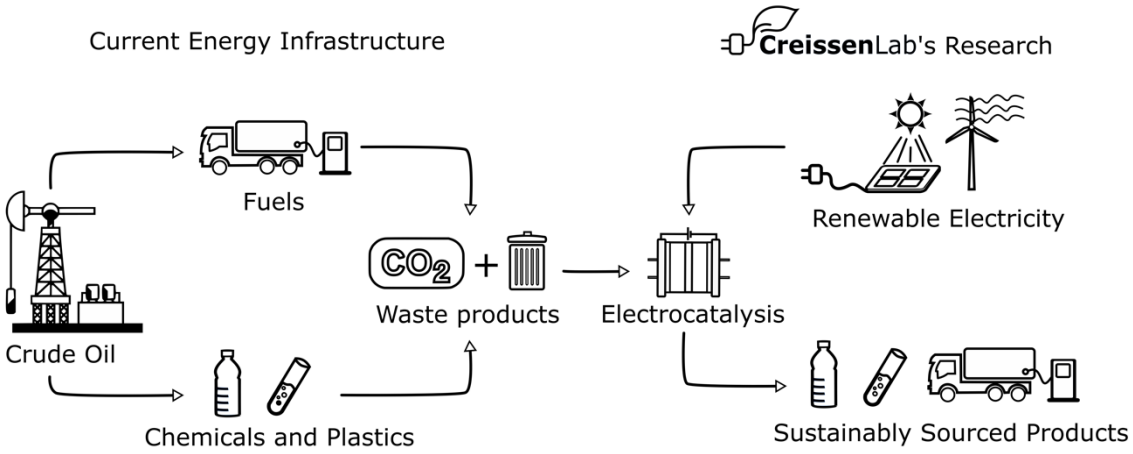
Funded PhD Position for a Start Date in 2023
CreissenLab, Keele University, UK

Electrocatalysts for CO_2 Conversion and Waste Material Oxidation

Sustainable energy solutions are required to reduce CO_2 emissions and tackle global warming. A technology capable of addressing this issue is the direct conversion of CO_2 into fuels and high-value chemicals using renewable electricity in electrochemical devices.[1,2] While one half of the reaction focuses on the selective conversion of CO_2, the other side of the cell is typically used for oxidation of water to form O_2.[3] However, this is not of high value and consumes a large portion of electricity. This half-reaction can be replaced by the oxidation of waste materials to generate useful chemicals. Effective catalysts for both reactions can be combined to generate valuable products at high reaction rates in custom-made devices.



This project will focus on the design, development, and understanding of novel electrocatalysts for co-electrolysis of CO_2 and species derived from waste streams. Through material synthesis, characterisation, modification, and integration in devices, the project will aim to understand the underlying mechanisms behind formation of different products and develop practical devices to advance this field of research toward commercialisation. For a basic overview of our research please visit https://creissenlab.com

Interested applicants should contact c.e.creissen@keele.ac.uk with a cover letter and CV.

References:

[1] D. Karapinar, C. E. Creissen, J. G. Rivera de la Cruz, M. W. Schreiber, M. Fontecave, *ACS Energy Lett* **2021**, *6*, 694–706.
[2] C. E. Creissen, M. Fontecave, *Adv Energy Mater* **2021**, *11*, 2002652.
[3] A. Peugeot, C. E. Creissen, D. Karapinar, T. N. Huan, M. W. Schreiber, M. Fontecave, *Joule* **2021**, *5*, 1281–1300.