

Michigan State University
Science at the Edge
Engineering Seminar

February 9, 2018

11:30 a.m., Room 1400 Biomedical and Physical Sciences Building
Refreshments served at 11:15 a.m.

Simon Kuhn

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***Electrification of the Chemical Industry:
Novel Flow Reactors for the Synthesis of Fine Chemicals and Pharmaceuticals***

Abstract

In the near future, we will witness a massive energy transition from fossil fuels to sustainable energy sources, such as solar and wind energy. It is evident that such a drastic change will be also needed in the chemical industry to reduce CO₂ emissions and to minimize the effects of global warming. Solar and wind energy can be transformed into electricity and this energy form can be directly used to induce chemical transformations (electrochemistry). Furthermore, electricity can also be used to drive light-assisted (photochemistry) or sound-assisted (cavitation reactors) processes, eliminating the need for conventional heating.

In this talk I will highlight applications of electricity based alternative energy sources for the activation of chemical processes including ultrasound integrated reactors for liquid-liquid reactions, gas-liquid flow oxidations using photo microreactors, and micro-scale electrochemical reactors.

Providing innovative reactor designs for the electrification of the chemical industry will enable to directly harness sustainable electricity from solar and wind.

Bio

Simon Kuhn received his Diploma in Chemical Engineering from TU Munich in 2004, and his PhD from ETH Zurich in 2008. From 2008-2010, he worked as Scientist at the Paul Scherrer Institute (PSI), Switzerland, and from 2010-2012 as post-doctoral fellow at the Massachusetts Institute of Technology (MIT), USA. Simon joined the Department of Chemical Engineering at University College London as assistant professor in 2012, and in September 2014 he was appointed associate professor at KU Leuven. His research interests lie in the characterization of transport processes in complex flows using experiments and modeling, scaling-up microchemical systems, and design of novel flow reactors using alternative activation modes (light, ultrasound, electrochemistry). His research has earned him a number of prestigious awards including the ETH medal and a Starting Grant from the European Research Council (ERC).

For further information please contact Prof. Richard Lunt, Department of Chemical Engineering and Materials Science at rlunt@egr.msu.edu

Persons with disabilities have the right to request and receive reasonable accommodation. Please call the Department of Chemical Engineering and Materials Science at 355-5135 at least one day prior to the seminar; requests received after this date will be met when possible.