



THE UNIVERSITY OF
SYDNEY

School of Chemical and Biomolecular Engineering

SEMINAR INVITATION

Liquid metals –new catalysts for NH₃ production and other reactions

Presented by

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Date: Thursday 2nd March 2023
Time: 2:00 pm – 3:00 pm (Sydney time)
Venue: Lecture Theatre 2, Chemical Engineering Building (J01)
Also Via Zoom: 522 796 0108

Speaker Details: Dr. Torben Daeneke is an Associate Professor within the School of Engineering at RMIT University. His early research focussed on charge transfer processes in dye sensitised solar cells, with an emphasis on transient laser spectroscopy. After joining RMIT he shifted his attention towards the synthesis and application of two-dimensional materials. His current research is focused on liquid metal chemistry, where he is exploring fundamental phenomena as well as applications in synthesis, electronics and catalysis. Dr Daeneke currently leads a research group of 17 HDR students and 4 postdoctoral fellows.



Seminar Details: Ammonia production is one of the most important processes that is currently conducted on industrial scales. At the moment, ammonia is used for the production of fertilisers, commodity chemicals as well as an ingredient for the synthesis of fine chemicals. More recently, ammonia is also considered as a convenient hydrogen storage medium which may help transitioning our society towards a more sustainable carbon neutral economy. Nevertheless, the ammonia production process itself is energy intensive and causes significant CO₂ emissions even if green hydrogen is used as a precursor. One of the main challenges is that the currently employed Haber-Bosch catalysts require high pressures and temperatures. In this work we demonstrate a novel liquid metal catalyst that can overcome many of the challenges of conventional ammonia catalysts. Aside from our current work on NH₃ catalysis, this talk will also discuss liquid metal facilitated CO₂ activation and the chemistry of molten metals more broadly.