

Bericht zum Reisestipendium Nr. 3915 der Max-Buchner-Forschungstiftung

„ Selective and Adaptive Hydrogenation of Amides using a Magnetically-Responsive Pt/Al₂O₃ Catalyst Heated by Magnetic Induction“

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Conference details

Fluctuations in renewable energy and feedstock present challenges for catalysts to adapt to dynamic conditions, driving the development of new catalysts and reactor. UCRA brings together these interdisciplinary fields to explore advancements of the research. The 3rd UCRA took place in Warsaw, featuring Nobel Laureate Prof. Frances Arnold and former NASA astronaut Prof. Jeffrey A. Hoffman, providing researchers with valuable opportunities to engage with leading experts.

Oral abstract

We have prepared a catalytic system suitable for magnetic induction heating, comprising iron carbide nanoparticles possessing excellent induction heating performance anchored on a commercial platinum on alumina (ICNPs@Pt/Al₂O₃). The catalyst was applied for the hydrogenation of amides heated by magnetic induction. Effective hydrogenation of amides to amines could be observed only with the catalyst heated by magnetic induction, with the Pt active sites being locally activated by neighboring ICNPs heating agents.

The system demonstrated adaptability to intermittent power supply and versatility in amide hydrogenation, showing great potential for synthesizing valuable amine building blocks. This approach also paves the way for developing other magnetically responsive systems to enable challenging chemical transformations under mild conditions using magnetic induction heating.

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