

触媒化学融合研究センター特別講演会

産総研触媒化学融合研究センターでは、様々な分野で活躍している大学、公的研究機関、企業等の方々をお招きして、講演会を開催することで分野の垣根を越えた連携の実現を目指しています。

多くの方々のご参加をお待ちしております。

日時: 2024年11月5日(火) 16:00~17:00

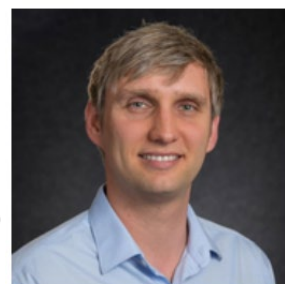
場所: 産総研つくば中央5群 第4会議室(6603室)

講演概要:

16:00-17:00

Prof. Christian H Hornung

(Group Leader & Director of FloWorks, CSIRO Manufacturing)



3D printed Flow Reactors for hydrogenations in chemical manufacturing and hydrogen storage

Over the past 25+ years, the use of efficient microstructured flow reactors has advanced several chemical manufacturing sectors to produce less waste and use less energy, when compared to traditional batch processes. More recently, several new enabling technologies have been introduced to the field, such as additive manufacturing for reactors & catalysts and the use of machine learning to design reactor geometries and optimise process parameters. Our group is using the above tools to create novel reactor systems and processes, using heterogeneous catalysts based on Ni, Pt, Pd, Ru and other transition metals. We have developed tailormade 3D printed catalyst inserts for tubular reactors used in continuous flow hydrogenations of value chemicals and the chemical storage of renewable hydrogen. With the help of CFD and AI-assisted algorithms, the structure of the mixer lattice can be optimised for different outputs, such as minimised pressure drop, maximised heat transfer or enhanced mixing. This approach gives access to a highly efficient and customisable catalyst platform which can be used in many different chemical applications.

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