

Open Symposium on Catalytic C1 Chemistry Friday 17 November 2017, Eindhoven

Programme

- 09:00 – 09:30 Welcome, Coffee and Tea
- 09:30 – 10:15 **Prof. dr. Jan-Dierk Grunwaldt** (Karlsruher Institut für Technologie)
"Dynamic structural changes of heterogeneous catalysts at work"
- 10:15 – 10:35 Topic I: Non-oxidative Coupling of Methane via Plasma Catalysis (UT, DIFFER, Sasol)
Prof. dr. Leon Lefferts (UT)
"Coupling of methane in a plasma, how can a catalyst help?"
- 10:35 – 10:55 Coffee/Tea break
- 10:55 – 11:40 **Prof. dr. Annemie Bogaerts** (University of Antwerp)
"CO₂ and CH₄ conversion by plasma and plasma catalysis"
- 11:40 – 12:45 Lunch
- 12:45 – 13:30 **Dr. Xander Nijhuis** (SABIC)
"Reactor aspects of the catalytic dehydroaromatization of methane"
- 13:30 – 14:10 Topic II: A holistic catalysis and reaction engineering approach to methane dehydroaromatization into chemicals (TU/e, TUD, SABIC)
Dr. Nikolay Kosinov (TU/e)
"Non-oxidative dehydroaromatization of methane: reaction mechanism and catalyst regeneration"
- 14:10 – 14:30 Coffee/Tea break
- 14:30 – 15:00 Topic III: Structure sensitivity of supported nickel catalysts for (de)hydrogenation of alkanes and alkenes (TU/e, UU, BASF)
Wilbert Vrijburg (TU/e)
"Nickel-based catalysts for CO₂ hydrogenation: particle size and promotor effects"

- 15:00 – 15:20 Topic I: Non-oxidative Coupling of Methane via Plasma Catalysis
(UT, DIFFER, Sasol)
Teofil Minea (DIFFER)
*“Methane reduction in microwave plasma for catalytic coupling
to higher hydrocarbon”*
- 15:20 – 16:00 Pitches NWO Technology Area Catalytic C1 Chemistry projects
Rolf Postma (UT) Catalytic pyrolysis of methane to ethylene
and aromatics
Robert Franz (TUD) Metal Organic Framework catalysts for the
gas phase direct synthesis of Methanol from Methane
Devin O'Neill (UT) Photography inspired activation of natural
gas
Sabine Wenzel (UL) Bridging the pressure and materials gaps
in methanol steam reforming
- 16:00 – 17:00 Drinks

Event details

Date: 17 November 2017, 9:00 – 17:00h

Location: Eindhoven University of Technology, Science Park, Ceres building,
room ICMS 0.31

For questions please contact: Nadine Mascini

T: 070-3494712 / 06-57509300

E: catc1chem@nwo.nl

Short abstracts

Prof. dr. Jan-Dierk Grunwaldt (Karlsruher Institut für Technologie)

"Dynamic structural changes of heterogeneous catalysts at work"

Probing the structure of catalysts during their preparation, their activation and under reaction conditions is a key for a targeted catalyst design. Furthermore, it is important to understand the dynamic nature of catalysts when exposing them to reaction conditions. Advanced X-ray techniques have become valuable tools for this purpose as the structure of catalysts can be while measuring the catalytic activity. This will be demonstrated with examples from C1-chemistry and beyond, e.g. total and selective oxidation methane, methanol synthesis from CO/H₂ or CO₂/H₂ or methanation of CO₂.

Prof. dr. Annemie Bogaerts (University of Antwerp)

"CO₂ and CH₄ conversion by plasma and plasma catalysis"

Plasma (catalysis) is gaining increasing interest for CO₂ and CH₄ conversion. First, an overview will be given of the state of the art in plasma-based CO₂ and CH₄ conversion, with different types of plasma reactors. Subsequently, some recent results obtained in Antwerp in this domain will be presented, including experiments and modeling for a better understanding of the underlying mechanisms.

Dr. Xander Nijhuis (SABIC)

"Reactor aspects of the catalytic dehydroaromatization of methane"

The dehydroaromatization of methane is industrially highly attractive to produce higher value products from methane. The catalytic aspects of this reaction have been extensively studied over the past 25 years. Even though significant progress has been made in the field of catalysis, this process is still not applied industrially. This presentation addresses some of the reactor and process technological aspects that are currently still holding back the application of this system.