



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) <i>"Dynamic structural changes of heterogeneous catalysts at work"</i>
10:15 – 11:00	Prof. dr. Annemie Bogaerts (University of Antwerp) <i>"CO₂ and CH₄ conversion by plasma and plasma catalysis"</i>
11:00 – 11:20	Coffee/Tea break
11:20 – 12:05	Dr. Xander Nijhuis (SABIC) <i>"Reactor aspects of the catalytic dehydroaromatization of methane"</i>
12:05 – 13:10	Lunch
13:10 – 13:50	Topic I: A holistic catalysis and reaction engineering approach to methane dehydroaromatization into chemicals (TU/e, TUD, SABIC) Dr. Nikolay Kosinov (TU/e) <i>"Non-oxidative dehydroaromatization of methane: reaction mechanism and catalyst regeneration"</i>
13:50 – 14:20	Topic II: Structure sensitivity of supported nickel catalysts for (de)hydrogenation of alkanes and alkenes (TU/e, UU, BASF) Wilbert Vrijburg (TU/e) <i>"Nickel-based catalysts for CO₂ hydrogenation: particle size and promotor effects"</i>
14:20 – 14:40	Coffee/Tea break
14:40 – 15:20	Topic III: Non-oxidative Coupling of Methane via Plasma Catalysis (UT, DIFFER, Sasol) Teofil Minea (DIFFER) <i>"Methane reduction in microwave plasma for catalytic coupling to higher hydrocarbon"</i> Prof. dr. Leon Lefferts (UT) <i>"Coupling of methane in a plasma, how can a catalyst help?"</i>
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, 9:00 – 17:00h

Location: [Eindhoven University of Technology, Science Park](#), Ceres building, room ICMS 0.31

Registration: You can register via [this link](#).

For questions please contact: catc1chem@nwo.nl (Nadine Mascini, tel: 070 349 47 12)

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.