Tailor-Made Fuels
From Production to Propulsion

5th International Conference Program
June 20th – 22nd, 2017 / Eurogress, Aachen

www.fuelcenter.rwth-aachen.de

with support of

DFG
Green Chemistry
TMFB
RWTH AACHEN UNIVERSITY
Tuesday, 20.06.2017

Brüsselaal: Keynote Session
Welcome and Introduction
Prof. S. Pischinger / RWTH Aachen University

A Multi-Scale Systems Engineering Perspective
Prof. R. Daashtest / University of Minnesota

Biofuel Fuel Properties Categorized by Oxygen Functional Group
Dr. T.D. Faust / National Renewable Energy Laboratory

Brüsselaal: Fuel Design
Investigating the Potential of Advanced Tailor-Made Biofuels – A Well-to-Tank Environmental Analysis of 2-Ethylhexanol as a Drop-in Diesel Alternative
S. Heyene / Chairsman University of Technology

A Model-Based Strategy for the Integrated Design of Biofuel Mixtures and their Production Pathways
M. Dahmen / RWTH Aachen University

Design Rules for Future Octane Boosters
M. Boot / TU Eindhoven

Brüsselaal: Selective Biomass Conversion
In-Line Spectroscopy for Observation of Biomass-Derived Chemicals
A. Echtscheimrey / RWTH Aachen University

Revealing Biomass Catalytic Upgrading: From Diffusion to Reaction
S. Kim / National Renewable Energy Laboratory

Oxidation of 5-Hydroxymethylfurfural to 2,5-Furandicarboxylic Acid over Ruthenium Catalysts Supported on SiO2 and ZrO2
M. Al-Shaal / Max-Planck-Institut für Kohlenforschung

Hydrothermal Processing of Organosolv Hemicellulose for the Production of Furfural
A. Schlemmer / ZEBIT

K2: Fuel Application 1
Effect of Using Butanol and Octanol Isomers in Diesel Engines
Y. Zhang / Chairsman University of Technology

Impact of Biofuels on Exhaust After-Treatment Systems for Passenger Car and NRMM Diesel Engine Applications
B. Stengel / University of Rostock

Long-Term Stability of Different Multicomponent Fuels
K. Lucha / BGR Fuel GmbH

Brüsselaal: Biomass to Platform Molecules
Atomatic Investigation on the Behaviour of Levoglucosen During Biomass Pyrolysis
X. Zhang / Queen’s University Belfast

Simultaneous Detection of Biomass Intermediates in Liquid Process Streams Using High Performance Anion Exchange Chromatography
A. Lunze / RWTH Aachen University

Screening and Evaluation of Cellulase Producers for the Consolidated Bioprocessing of Cellulose to Itaconic Acid
J. Schlemmer / RWTH Aachen University

Experimental and Numerical Kinetic Study of a Novel Biofuel for Gasoline Engine Combustion: Cyclopentanol
L. Cul / RWTH Aachen University

Brussels: Keynote Session
Biofuels: A Bypass Lane to Transport Decarbonisation
Prof. M. Hylola / VTT Technical Research Center Finland

Sustainable Mobility Based on Advanced Internal Combustion-Engine Technology and the Role of Renewable Fuels
Dr. A. Schanman / Ford Research and Innovation Center Aachen

Poster Party – Snacks and Drinks at the Eurogress

Wednesday, 21.06.2017

Brüsselaal: Keynote Session
Energy Transition and Mobility: Myths and Reality
Prof. S.A. Tanque / Total

The Long Road to Commercial Fuels for Internal Combustion Engines from Regenerative Sources
Prof. J. Sauer / Karlsruhe Institute of Technology

Brüsselaal: Fuels from Renewable Electricity 1
Advanced Redox Materials for the Solar-Driven Thermochemical Splitting of H2O and CO2
C. Muhich / ETH Zurich

Optimized Synthesis of Oxymethylene Dimethyl Ethers (OMEs) from Dimethoxymethane and Trioxane
E. Haltenort / Karlsruhe Institute of Technology

Separation Enhanced Dimethyl Ether Synthesis
E. van Berkel / ECN

Brüsselaal: Fuels from Renewable Electricity 2
Well-to-Wheel: Environmental Potential of CO2-Based Oxymethylene Ethers as Blending Component
S. Deutz / RWTH Aachen University

Can Electrofuels in Combustion Engines be Cost-Competitive to Hydrogen in Fuel Cells?
M. Grahn / Chairsman University of Technology

Brussels: Keynote Session
Fuel Property and Engine Combustion Research of the US Co-Optima Initiative
Dr. M. Musculus / Sandia National Labs

Production and Field Testing of Methanol and DME from Forest Industry By-Products
Prof. B. Gohrt / Ludwig University of Technology
**Wednesday, 21.06.2017**

**Brüsselaal: From Biomass to Biofuels**

- Economic Potential of Producing Fuel and Chemicals from Biomass or Electricity in North-Rhine Westphalia
  - A. König / RWTH Aachen University

- Enrichment of Fossil- and Biofuels With 2,5-Dimethylfuran
  - E. Nürenberg / Max-Planck-Institut für Kohlenforschung

- Production of Oxymethylene Ether (OME) from Different Lignocellulosic Biomass – A Comparative Techno-Economic Assessment
  - A. Oyedun / University of Alberta

- Model-Based Equipment Design for Multiphase Reactors
  - M. Aigner / RWTH Aachen University

**K2: Fuel Application 2**

- Oxymethylene Ether (OME) as a Sustainable Fuel for CI Engines and its Potential for Sub-Zero Emissions – Latest Results of TUM Fuel Research
  - M. Härtl / TU Munich

- Potential for Ultra-Low Emissions With OME and TWC on a CI Engine
  - M. Münz / Technical University Darmstadt

- Holistic Investigation of a 50/50 DnBE - 1-Octanol Blend Regarding the Complete Injection System
  - M. Rückert / RWTH Aachen University

- Simulation Tool for a Quick Evaluation of Molecules as Gasoline Alternatives
  - D. Gschwend / Paul Scherer Institut

**From Biomass to Biofuels**

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**Thursday, 22.06.2017**

**Brüsselaal: Keynote**

- Integration of Mobility in Future Sustainable Energy Systems
  - Prof. R. Schlögl / Max-Planck-Institut für Chemische Energieumwandlung

**Brüsselaal: TMFB Report 1**

- TMFB Status Update Integrated Research Field A “From Biomass to Biofuels”
  - Prof. W. Leitner / RWTH Aachen University

**Brüsselaal: TMFB Report 2**

- TMFB Status Update Integrated Research Field B “From Biofuels to Propulsion”
  - Prof. W. Schröder / RWTH Aachen University

- TMFB Status Update Core Interaction Field “Fuel Design”
  - Prof. S. Pischinger / RWTH Aachen University

- Closing Remarks / Poster Prize
  - Prof. S. Pischinger / RWTH Aachen University

**End of the Public Part of the Conference**

**K2: IAB – Meeting of the TMFB International Advisory Board**