



Introducing the work of my group @ TU Berlin

York Neubauer | Institute of Energy Engineering | Berlin 2017-09-07

Junior research group ‚NWG-TCKON‘

**Fundamental examinations and selective influencing of heterogeneous reactions in thermochemical conversion of biomass and robust, continuous on-line monitoring of the organic load on the gas phase .
„NWG-TCKON“**

Junior research group funded in the framework of the call of the Federal Ministry of Education and Research (BMBF):

Promotion initiative BioProFi: "Bioenergy – process oriented research and innovation"

In the framework of the promotion concept ‚Fundamental research 2020+‘ and the ‚6th energy research program‘ of the federal government



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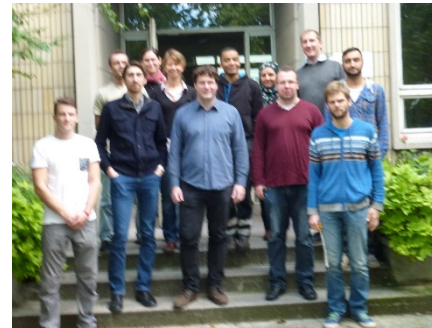
Junior research group ‚NWG-TCKON‘

Some facts:

Project duration: October 2012 – September 2017
Intermediate evaluation: 2015 (3+2 years funding)

5 persons core team:

- 1 Head of group
- 1 post doc
- 2 PhD students
- 1 technician
- + students



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Main aims of research group

- **Actively influencing of heterogeneous reactions of gas or vapour with the solid surfaces of carbon structures in the conversion process**
- **Selective influencing and making use of the properties of char generated in the process**
- **Fluorescence of aromatic multi-component mixtures in hot product gases of Thermochemical conversion processes / development of a robust ,tar‘ sensor**

aims of in detail

fundamentals

- Reactivity of char under varying process conditions (e.g. variation of gasifying agent –steam and oxygen content)
- ‚activation‘ of char within the process
- Making use of high voltage (non-thermal) plasma for influencing the reactions
- Downstream removal of problematic gas constituents by sorption / condensation on solid process material (char)
- Gas analysis by fluorescence spectroscopy

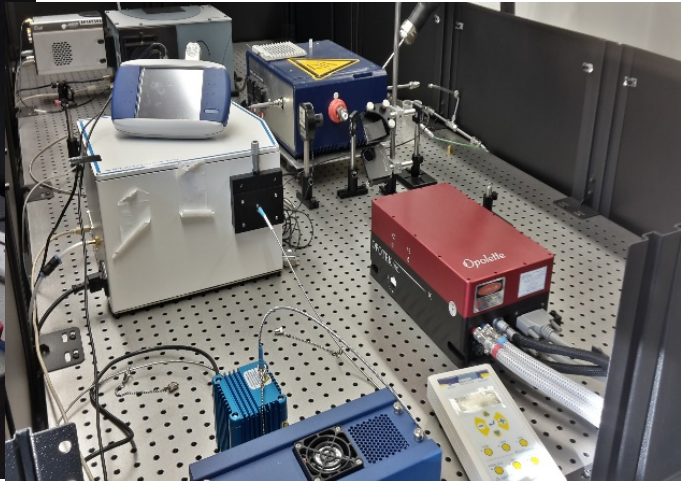
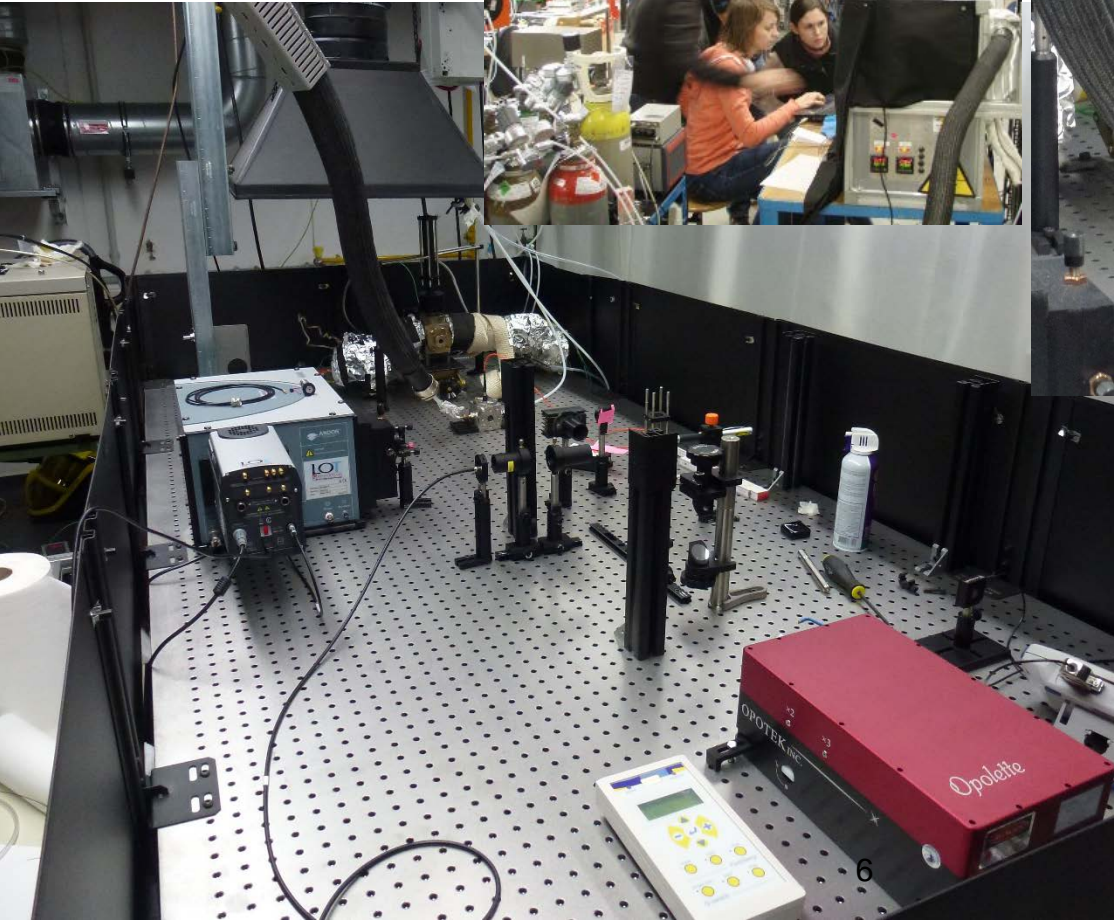
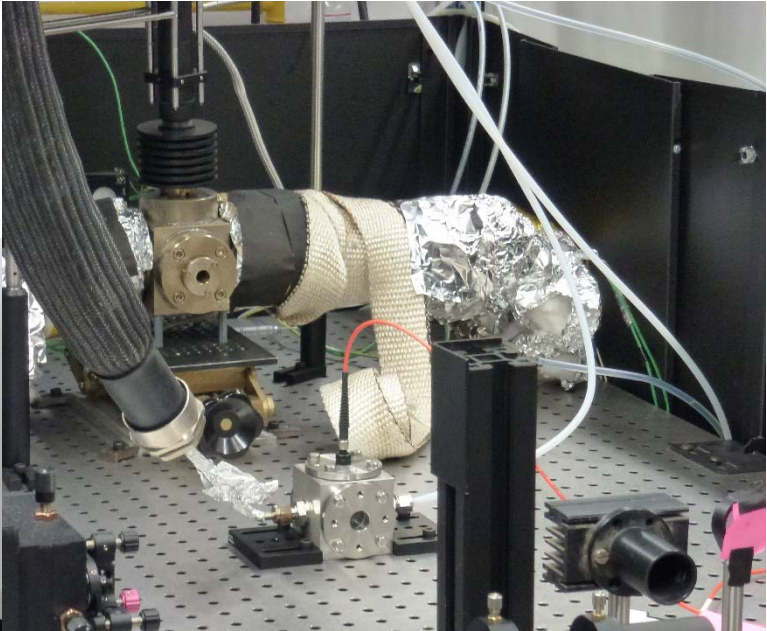
application

- Influencing the gasification process – gas composition, heating value / the properties of char (porosity, reactivity) in the reactor
- Ad-sorption/condensation of problematic gas compounds on process char
- ‚reactivation‘ of tar loaden char by NT-Plasma

sensor

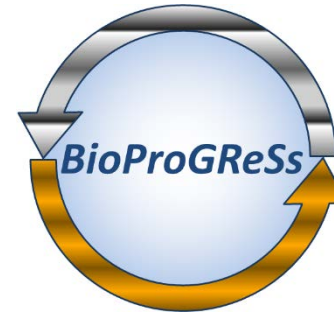
- Robust optical gas analysis system for fast on-line characterization of process gas quality in hot gas phase multi component PAH mixtures

Laser spectroscopy



New Projekt: BioProGReSs

Biomass Product Gas Reforming Solutions

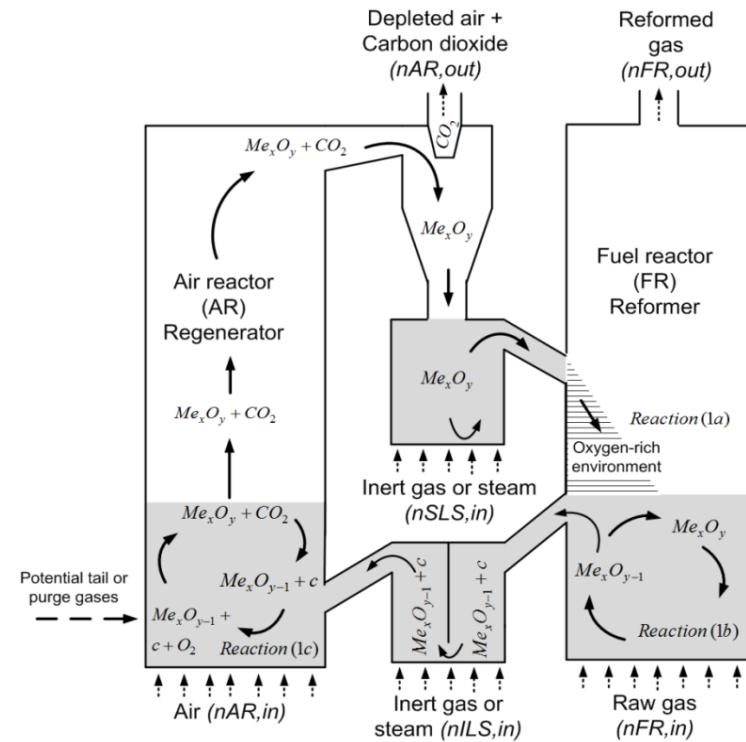
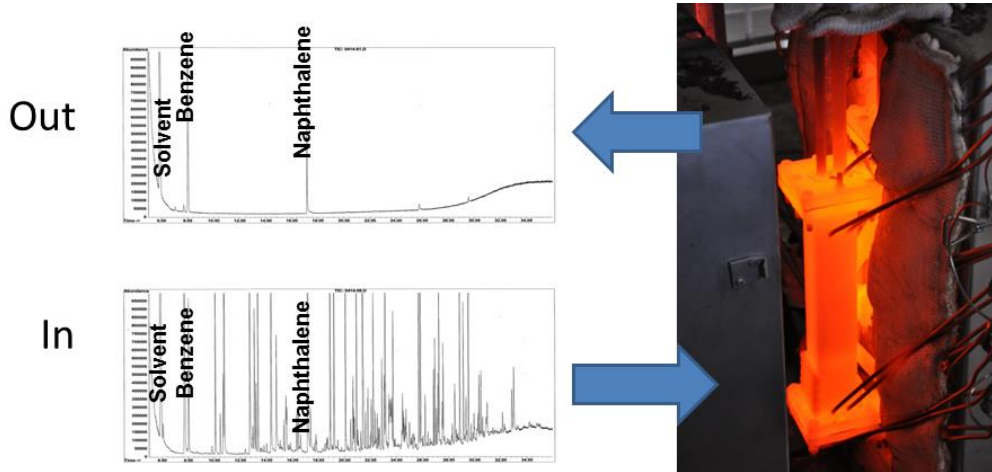
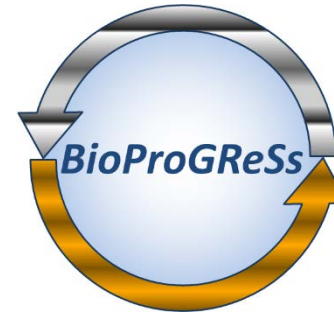


- **The project BioProGReSs deals with the demonstration and evaluation of a chemical looping tar reforming process**
- Project partners:
- Göteborg Energi, Chalmers University of Technology, RENEWTEC, TUB-EVUR
subcontractor to TUB: wandschneider+gutjahr ingenieurgesellschaft mbH
- duration: September 2014 - September 2017
- total volume: 5,32 Mill EUR
- grant TUB 420.000 EUR

More information: www.bioprogress.se

BioProGReSs

Biomass Product Gas Reforming Solution



Source: CHALMERS University of Technology