

ComKin Group

Department of Energy and Process Engineering (EPT)
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Department of Energy and Process Engineering

The ComKin (Combustion Kinetics) group works on both *numerical* and *experimental* aspects of combustion science, with special emphasis on renewable and sustainable energy solutions.



Prof Terese Løvås,
Group leader

Experience with NH_3 and engines-
experimental and numerical



Mrs. Jessica Gaucherand
Low emissions centre:
 NH_3 and H_2 in ICE, numerical



Dr. Michal Lewandowski,
ACTIVATE: ICE, numerical,
CFD, kinetics



Dr. David Emberson
Energy transitions/
Low emissions centre:
ICE, experimental and
numerical

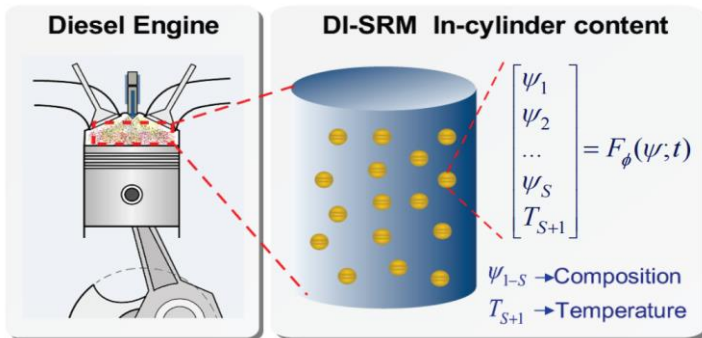


Mr. Zhongue Xue,
ACTIVATE: NH_3 and
 H_2 in ICE.
Experiments

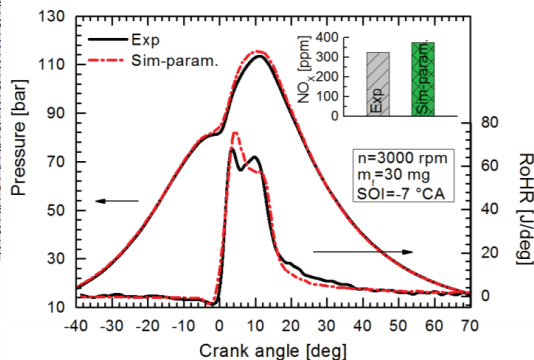


Dr. Corinna Netzer,
BioCarbUp, LogeEngine

Engine simulation

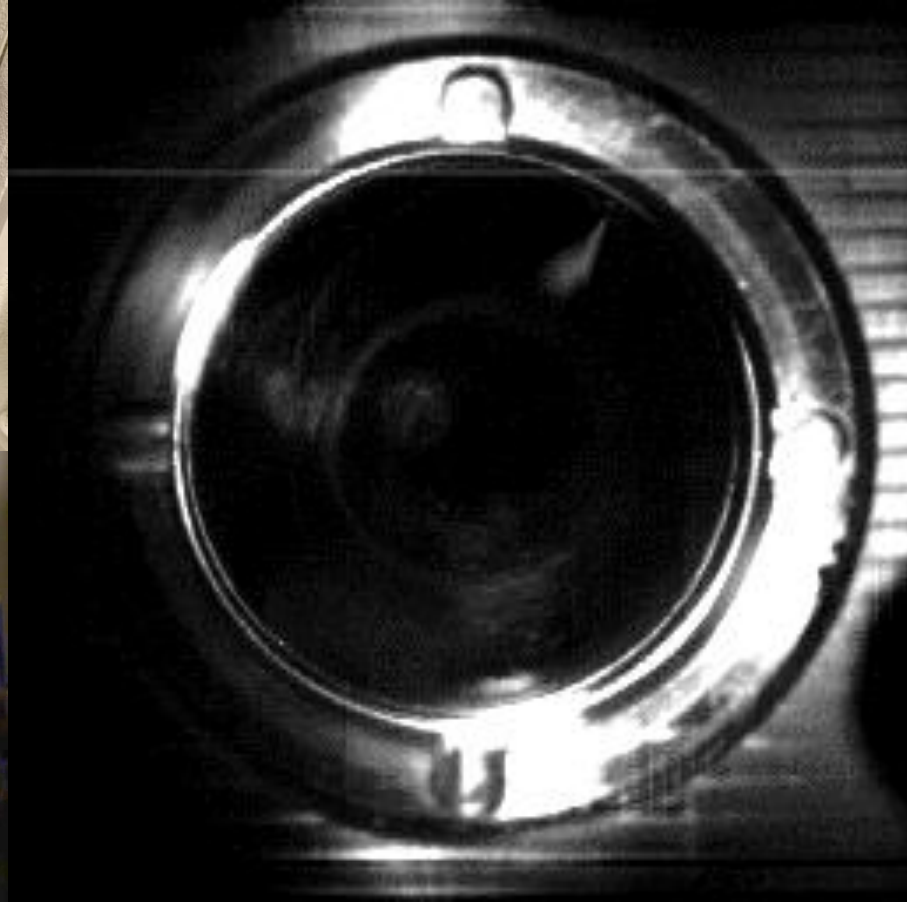
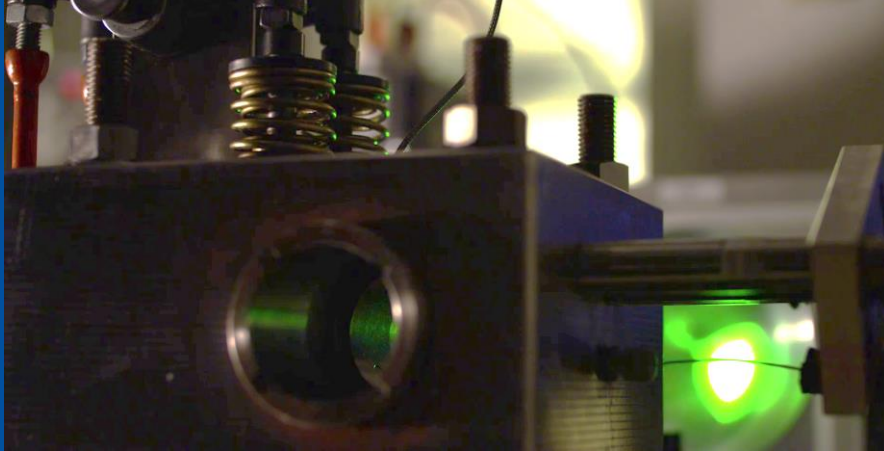


N	Name	A	n	E _a (kJ/mole)
46...	C13H27-1+C13H27O2-7 \rightleftharpoons C13H27O-1+C13H27O-7	7E12	0	-4...
12...	C5H10O0H1-4O2 \rightleftharpoons NC5KET14+OH	31.25E08		
48...	C8H17-2+C8H17O2-2 \rightleftharpoons 2C8H17O-2	7E12		
42...	C11H22-3+O \rightleftharpoons C2H5CHO+C8H16-1	10E12		
37...	C10H21-4+O2 \rightleftharpoons C10H20-3+HO2	30E-12		
79...	C9O3-4+OH \rightleftharpoons C2H5CHCO+C5H11-1+H2O	2.5E12		
30...	NC14H30+C14H29O2-7 \rightleftharpoons C14H29-3+C14H29O2H-7	10E12		
79...	C9O4-6+OH \rightleftharpoons NC3H7CO+C5H10-1+H2O	2.5E12		
70...	C14KET7-5 \rightleftharpoons OH+NC4H9CHO+C7H15COCH2	1.05E12		
238	C4H8-2+O \rightleftharpoons C2H4+CH3CHO	46.4E02		
26...	NC16H34+CH3 \rightleftharpoons C16H33-4+CH4	5.41E02		
469	C5H11-2 \rightleftharpoons C5H10-1+H	16.45E12		
74...	C15O5-6+HO2 \rightleftharpoons NC4H9CO2H3+C8H17-1+H2O2	5E12		
34...	NC8H18+C8H17O2-3 \rightleftharpoons C8H17-2+C8H17O2H-3	10E12		



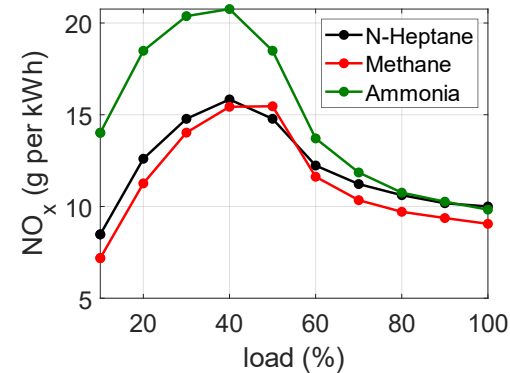
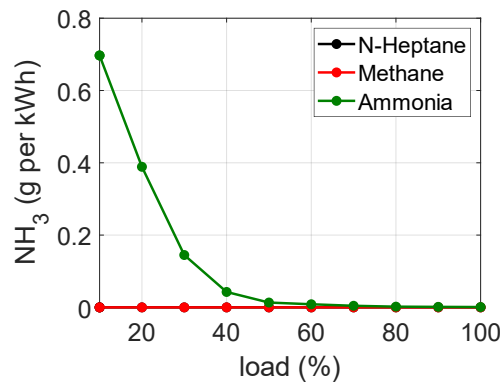
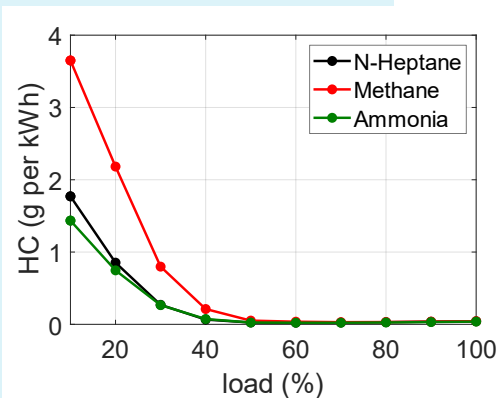
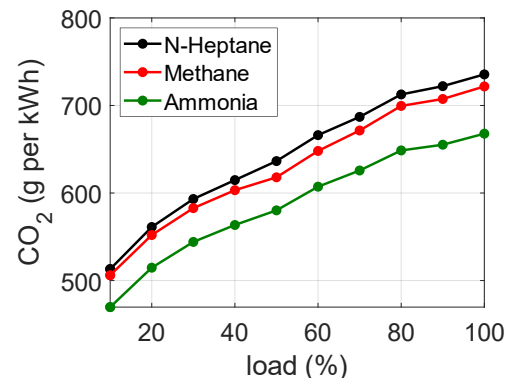
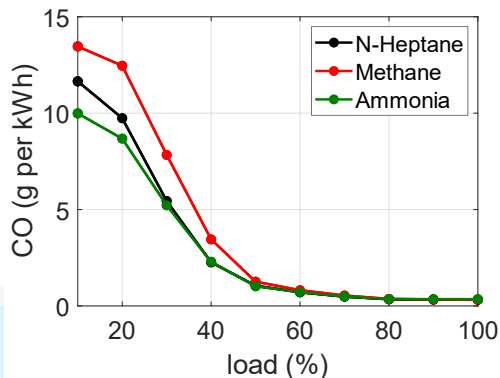
- LOGE AB/LOGE Deutschland GmbH
- In-homogeneities in the combustion chamber
- Turbulence chemistry interaction
- Detailed chemistry for combustion and emissions
- Advanced mixture formation processes

Motor lab



Results and discussion

Exhaust emissions for 10 to 100% loads



NTNU in CAHEMA

- Principal investigator (PI) of WP1:
 - Detailed chemical kinetic mechanisms for ammonia (NH_3), hydrogen (H_2) and n-heptane (C_7H_{16}) mixture will be developed. The work will be carried in collaboration with Professor Peter Glarborg at Technical University of Denmark (DTU).
- In WP2 (PI LU), subtask 2: NTNU will use the stochastic reactor model (SRM) to study two different engine concepts (RCCI and DDFS). Comparative to the CFD conducted by LU.
- In WP3 (PI AU): optical rig used to evaluate the two combustion concepts RCCI and DDFS. Comparative to the experiments at AU.
- In WP4 (PI WMU): provide necessary input from WP 2 and 3 for environmental and socio-economic assessments.

Thank you for your attention!

ComKin Group

Welcome to the website of the ComKin Group (Combustion Kinetics Group)!



Funding

The research is sponsored on various levels by the NTNU, Research Council of Norway, Nordic Energy Research, EU, and industry.



ComKin News

