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Project Profile

SCHMALKALDEN
UNIVERSITY OF APPLIED SCIENCES

Tribological Behaviour of C-Based Thin-Film Systems in Biofuels

Alternative diesel fuels	**Alternative petrol fuels**
Rapeseed methyl ester (RME)	Bioethanol
Soy methyl ester (SME)	Compressed natural gas (CNG)
Gas to liquid (LTL)	
Biomass to liquid (BTL)	

Doped DLC films (surface of fracture), REM

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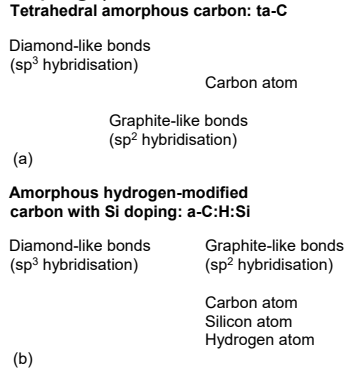
Object of research:

- C-based thin films without / with doping (ta-C, a-C:H, a-C:H:Si, a-C:N, etc.)



- Raman spectroscopy on C-films
- Characterisation of different biofuels and interaction with C-films
- Investigation of the influence of stabilisers and additives
- High-temperature tribology

Key words

- C-based thin films
- PVD process
- PE-CVD process
- Biodiesel (e.g. RME, SME)
- Bioethanol
- Wear tests & transfer film formation
- Self-healing and smart effects

Third-party funds provider:

- Federal Ministry of Education and Research (BMBF) Support for Young Engineers at Universities of Applied Sciences *Biokraft-TriC 03FH026I2*

Results:

- Stabilisers in biodiesel have an impact on the tribological behaviour
- Different biodiesel grades (different biomass raw materials, manufacturing technology, additives etc.) have an impact on degradation due to wear
- Interaction of doped a-C:H:X-films with water and other polar components of the biofuel has an impact on the friction coefficient

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  www.plascotec.de/downloads/MO_Jahrg._70 2016_3.pdf

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- from 1.11.2012 -31.12.2015 (2.5 years)

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