Donnerstag 08. Dezember 2016
16:15 Uhr, Hörsaal H3

Micro- & Nanoscale Heterogeneities in compressed fluids and their impact onto the process and the product

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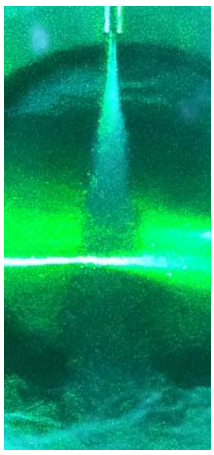
During the presentation I am going to report on the research contents and methods of my ERC Starting grant.
A Raman method will be described which probes the development of the hydrogen bonds in water or alcohol containing fluid systems. From the measured development of the hydrogen bonds, information can be extracted whether or not the analyzed system features a structuration on the micro or nanoscale. Structures on such a small scale are not resolvable with conventional measurement techniques under process relevant conditions.

The Raman technique is then applied

- to study the working principle of chemical substances inhibiting or promoting the formation of gas hydrate particles (applications towards energy or CO_2 sequestration) [1]
- to analyze CO_2-based surfactant free microemulsion-like systems (application towards green particle technology) [2]
- and to quantify the lag between macro and micro mixing in compressed flows (application towards sprays/jets in compressed environments, such as Diesel or rocket engines and particle formation).



All these example applications have a structuration on the micro or nanoscale in common.

[1] C. Holzammer, A. Finckenstein, S. Will, A.S. Braeuer, How Sodium Chloride Salt Inhibits the Formation of CO2 Gas Hydrates, The Journal of Physical Chemistry B, 120 (2016) 2452-2459.
[2] R.F. Hankel, P.E. Rojas, M. Cano-Sarabia, S. Sala, J. Veciana, A. Braeuer, N. Ventosa, Surfactant-free CO2-based microemulsion-like systems, Chemical Communications, 50 (2014) 8215-8218.