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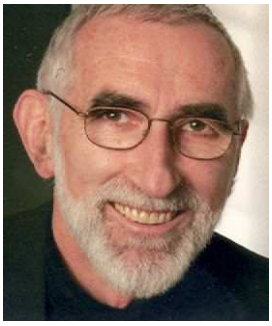
Einladung zum Physikalischen Kolloquium

Montag, 13.12.2010, 16.15 Uhr, H2 (025)



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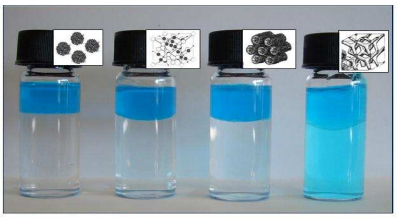
Hierarchically Organized Nanostructured Lipid Based Materials

Glycerolmonolinolein (MLO), Glycerolmonoolein (GMO), Phytantriol (PT) and a few other lipophilic molecules self-assemble in bulk in presence of water to form well defined liquid crystalline phases. Their structure can be tuned by temperature variation and/or by addition of oils. This leads to gel-like or fluid systems with a large internal interface between water and oil domains with different viscosities.



These nanostructured phases can be dispersed in the excess water phase by addition of an external stabilizer and energy input leading to internally self-assembled particles, so-called *ISAsomes* [1-4]. All these dispersed nano-structured lipid based systems have a great potential as delivery systems for hydrophilic, amphiphilic and lipophilic functional molecules in very different fields like pharmaceutical and cosmetic applications, food science and agro-chemistry. So it is possible to create high effective load emulsions from hydrophobic solid functional materials in agrochemistry avoiding organic solvents for emulsification. It may also be interesting to notice that these structures are formed in our body during fat digestion.
Recently we succeeded in creating W/O nanostructured emulsions based on these lipid phases without the need of addition of an emulsion stabilizer.

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[1] L. de Campo, et al., 2004 *Langmuir* **20**, 5254.
[2] A. Yaghmur, et al., 2005 *Langmuir* **21**, 569.
[3] A. Yaghmur, et al., 2006 *Langmuir* **22**,
[4] Ch. Moitzi, et al., 2007 *Adv. Materials* **19**, 1352.517.

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