Universität Duisburg-Essen
Lehrstuhl für Technische Chemie II

Prof. Dr. Mathias Ulbricht

Technisch-Chemisches Kolloquium

Dienstag, **07.07.2015**

16 Uhr c.t.

Raum S05 T00 B08 (Campus Essen)

Advanced membranes inspired from bio-systems

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Systematic membrane design is important to develop next generation synthetic membranes, and necessary functions are not only separation but also molecular recognition and actuation like in bio-membranes. Those functions should be coordinated in the membrane pores and the assembly to maximize a specific output. Hence, we should systematically design the multiple functions in the membranes.
A novel molecular recognition gating membrane was developed. The device facilitates to make a new process showing bio-membrane-like system functions. The membrane is a porous thin film, and the pores rapidly open and close in response to specific ion or molecular signals. The molecular recognition ion gating membranes can control membrane flux, molecular weight cut-off curve, and osmotic pressure. Those functions can be coordinated and make an oscillation device in which the membrane pores can be opened and closed autonomously with time. Those membranes can be applied to tissue engineering and bio-sensors. We should systematically design the multi-functionality from molecular level to macro level in the pores, and the hierarchical design and development approach will be discussed.

Gäste sind herzlich willkommen!