

## Technisch-Chemisches Kolloquium

Montag, 30.05.2022

15 Uhr c.t.

Raum S05 V01 E69 (Campus Essen)

### *Enabling High Performance Molecular Separations: A Journey to a Platform Where Material Science, Interfacial Phenomena and Chemical Engineering Meet*

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Emergence of membrane processes with attractive features has resulted in their extensive exploitation for diverse molecular separations. Despite decades marked with great progresses and achievements, explorations are still ongoing for development of advanced materials and processes with unique characteristic to enable improved efficiency and performance in tandem with reduced energy consumption and overall costs. This talk intends to showcase a number of exemplary efforts based on exploring new ideas within the paradigm of combining the synergistic aspects of material science, interfacial phenomena and chemical engineering to address some of the challenges that have hampered application of membrane separation processes. The discussions include success stories in the fields of water and wastewater treatment, recovery of organic solvents, gas, vapor and hydrocarbon separation, as well as biomedical applications. In addition, results and trends on effective employment of techniques for tailoring surface properties of membranes, synthesis of functional nanomaterials and incorporating them within the matrix of polymeric membranes will be presented. Besides, the important role of modelling and simulation approaches to support the experimental endeavours will be elaborated. The conclusion is that adoption of an interdisciplinary approach is a key enabler for making breakthroughs with tangible outcomes.

***Gäste sind herzlich willkommen!***