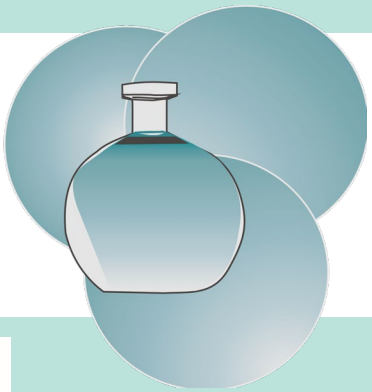
Fakultät für Naturwissenschaften

Institut für Chemie



lädt ein

gemeinsam mit der Gesellschaft Deutscher Chemiker zum

Vortrag
von Herrn

Prof. Jürgen Senker

Inorganic Chemistry III and Northern Bavarian NMR Centre
University of Bayreuth

“Guest-Host Materials for Gas Storage, Photocatalysis, and Ion Conduction – Influence of Confinement Effects”

am: 17. Oktober 2024

um: 16:00 Uhr

wo: im Raum 1/232

Die kleine Kaffeerunde vor dem Vortrag beginnt um 15:30 Uhr im Raum 1/232.
Das Mitbringen von eigenen Trinkgefäßen ist erwünscht.

Gäste sind herzlich willkommen!

TECHNISCHE UNIVERSITÄT
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Fakultät für Naturwissenschaften

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Prof. Jürgen Senker

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University of Bayreuth

GDCh Gesellschaft Deutscher Chemiker

Guest-Host Materials for Gas Storage, Photocatalysis, and Ion Conduction – Influence of Confinement Effects

Porous materials offer potential for applications as diverse as gas storage and separation, catalysis, electronic and ionic transport, and sensor design. In particular, porous materials become relevant in the context of current efforts to realize a sustainable energy future. For example, they are used for separators in electrochemical energy storage and conversion devices. The spatial and chemical constraints of the structured hosts enforce a shape to the adsorped fluid phases and impose interactions at the guest-host interfaces. If the dimension of the constraints reaches the nanometre scale, confinement effects on properties like mass and charge transport emerge. Recent results suggest that the complex interplay between the confinement-induced guest-host interactions and the mobility of the mass and charge carriers can lead to exceptional properties of the guest-host materials.

The lecture will provide an overview of our recent advancements in synthesizing and post-synthetic modification of porous polymers and covalent-organic and metal-organic frameworks to understand and use these confinement effects. We apply an integral approach to analyzing structural details, local dynamics, and long-range transport simultaneously. We combine techniques like powder X-ray diffraction, sorption measurements, solid-state NMR spectroscopy, NMR diffusometry, and computational chemistry.

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