technische universität dortmund

Confinement Controlled Chemistry GRK 2376

EINLADUNG

Im Rahmen der gemeinsamen Kolloquien der Fakultät für Chemie und Chemische Biologie der Technischen Universität Dortmund und des DFG Graduiertenkollegs GRK2376 "Confinement-Controlled Chemistry" hält

Herr Prof. Dr. Mingoo Jin

Institute for Chemical Reaction Design and Discovery, Hokkaido University Japan

einen Vortrag mit dem Thema:

"Design of Crystalline Molecular Gears: Intermeshing Molecular Units and Correlated Dynamics in Crystalline Media"

In general, molecular crystals construct a densely packed crystalline lattice in solid-phase via formation of various intermolecular interactions, which generally suppress the molecular motion in crystal. However, structural information at the molecular level may be used to design amphidynamic crystals with rotating elements linked to rigid, lattice-forming parts, which may lead to molecular rotary motions and changes in conformation that determine the physical properties of the solid-state materials.[(1)] Recently, our group have developed several examples on solid-state emission (phosphorescence, chiroptical properties) that correlated with the rotational motion in crystalline media.[(2,3)] In this lecture, the artificial crystalline molecular machinery, which exhibit rotational, correlated motion, with novel design concept as well as the molecular motion-related solid-state emission properties will be presented from the fundamental background to the recent applications.

References:

1. Vogelsberg, C. S.; Garcia-Garibay, M. A. Crystalline molecular machines: function, phase order, dimensionality, and composition. *Chem. Soc. Rev.* **2012**, *41*, 1892– 1910.
2. Kim, N.; Jiang, P.; Tomita, R.; Sato-Tomita, A.; Mikherdov, A.S.; Kim, B.S.; Jin, M.* Encasing Triaryltriazine with a Bulky Chiral Cap: Luminescent Chiral Crystalline Molecular Rotors with Modulation of Solid-State Chiroptical Properties Mediated by Molecular Rotation. *J. Am. Chem. Soc.* **2024**, *146*, 31062–31073.
3. Jin, M.*; Ando, R.; Jellen, M. J.; Garcia-Garibay, M. A.; Ito, H.* Encapsulating N-Heterocyclic Carbene Binuclear Transition-Metal Complexes as a New Platform for Molecular Rotation in Crystalline Solid-State. *J. Am. Chem. Soc.* **2021**, *143*, 1144–1153.

Zeit: **Donnerstag, 10.07.2025, 13.00 Uhr**
Ort: **Campus Nord, Chemiegebäude, Hörsaal 3**

Für die Dozierenden der Chemie

Im Auftrag des Dekans

Kontakt: Prof. Guido Clever (8677)