Neues Denken. Neue Materialien.

INM-KOLLOQUIUM

"BIOINSPIRED MATERIALS FOR CONTROLLING ICE FORMATION"

Prof. Jianjun Wang
Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China

Thursday, 14 September 2017, 11.00 am

INM, Leibniz-Saal, Campus D2 5
Host: Dr. Jiaxi Cui

Ice formation is ubiquitous and crucial in many fields such as geology, cryobiology and climate science. Although ice has attracted the interest of scientists for hundreds of years and many Nobel laureates have worked in this field, molecular level mechanism of ice formation still puzzles us. Learning from nature may break this dilemma. Antifreeze proteins (AFPs), for instance, can protect living organisms from freezing damage via controlling ice formation, e.g., shaping ice crystals, inhibiting ice growth and recrystallization. Therefore AFPs have gathered extensive interests of scientists since AFPs were first discovered in 1969. However, many open questions remain on the exact effects of APFs on ice formation. This talk presents our recent progress on understanding and controlling ice formation. We discover the Janus effect of AFPs on ice formation, and our investigation on the mechanism of AFPs at the molecular level reveals that interfacial water plays a critical role. Further design and fabrication of AFP mimics consolidate the pivotal importance of the interfacial water on the nucleation, growth, shape and recrystallization of ice crystals. Moreover, we also discuss application-oriented materials emerging from our enhanced understanding of ice formation, i.e., aqueous lubricating anti-icing coatings, cryopreservation of cells and templates for porous materials with recrystallized ice.

You are invited to a get together with the speaker 15 minutes before the talk.

CONTACT

INM – Leibniz-Institut
für Neue Materialien gGmbH
Campus D2 2
66123 Saarbrücken
www.leibniz-inm.de

Christine Hartmann
Event Manager
christine.hartmann@leibniz-inm.de
Tel: 0681-9300-244
Fax: 0681-9300-233