ICReDD International Seminar Series

Professor Sureshan Kana Meethaleveetil (IISER Thiruvananthapuram)

Topochemistry for solving challenges in polymer synthesis

Place: ICReDD 4F, ICReDD Hall

Time: May 29, 2026, Thursday
16:30-18:00

Abstract: Topochemical reactions, the reaction between pre-organized reacting motifs in the crystal lattice, are attractive as they do not require solvents, catalysts and other special reaction conditions for the reaction and provide products in pure form. Also such reactions provide basic understanding about mechanistic and geometrical details about a reaction. We have employed thermal Topochemical Azide–Alkyne Cycloaddition (TAAC), Topochemical Ene-Azide Cycloaddition (TEAC) and Topochemical Diels-Alder Cycloaddition (TDAC) reactions to synthesize various biopolymer mimics. We have exploited hydrogen bonding for the self-assembly of monomers in solid to pre-organize the reacting motifs. Lattice controlled polymerization/oligomerization reaction of such self-assembled (pre-organized) monomers gave various biopolymer mimics. By applying this methodology, we have topochemically synthesized monodisperse glycopolymers, oligosaccharide mimics, DNA analogs and polypeptides. In this talk, I will demonstrate the use of topochemical polymerization in the synthesis of ladder polymers, 2D polymers, stereocomplex, polymer-polymorphs etc.

A seminar organized by the
Ito Group
(WPI-ICReDD, Hokkaido University)