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天然产物全合成与创新药物研究重庆市重点实验室学术报告 第三百九十八讲

报告题目: "Escape from Flatland": Lewis Acid-Catalyzed Reactions of Bicyclo[1.1.0]butanes (BCBs)

报告人: Akkattu T. Biju 教授 (Department of Organic Chemistry, Indian Institute of Science)

主持人: 张敏 教授

时 间: 2025年11月4日(周二)15:00

地 点: 药学院学术报告厅

报告人简介:

A. T. Biju received his M. Sc. from Sacred Heart College Thevara (affiliated to MG University, Kerala, India) and Ph.D. under the guidance of late Dr. Vijay Nair at the CSIR-NIIST (Formerly RRL), Trivandrum, India. Subsequently, he has been a post-doctoral fellow with Prof. Tien-Yau Luh at the National Taiwan University, Taipei and an Alexander von Humboldt fellow with Prof. Frank Glorius at the Westfälische

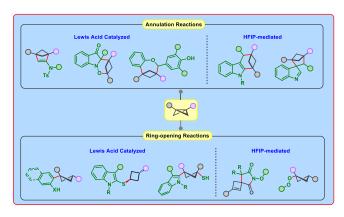


Wilhelms-Universität Münster, Germany. In June 2011, he began his independent research career at the CSIR-National Chemical Laboratory, Pune. In June 2017, he moved to the Department of Organic Chemistry, Indian Institute of Science, Bangalore, where he is a professor presently. His research focuses on developing strategies using N-heterocyclic carbene (NHC) organocatalysis, and strain-release driven reactions of arynes, donor—acceptor cyclopropanes and bicyclobutanes.

报告简介:

The versatile reactivity of bicyclo[1.1.0]butanes (BCBs) makes them an attractive choice for synthesizing decorated cyclobutanes or functionalized bicyclic frameworks. In this context, we have recently demonstrated the nucleophilic reactivity of BCBs in Lewis acid-catalyzed highly diastereoselective ring-opening reactions with

naphthols.² Moreover, BCBs were also effectively utilized in ene reactions: in one instance, BCBs act as the ene component when reacting with in situ generated benzynes,³ while in another case, they function as enophiles under Lewis acid catalysis with thioindolinones.4 Additionally, the synthesis of oxabicyclo[4.1.1]octanes via Lewis acid-catalyzed (4+3) annulation with para-quinonemethides has also been



realized.⁵ Further, the Lewis acid-catalyzed reaction of BCBs with ynamides and isatogens has also been developed recently.^{6,7} Finally, the use of HFIP to activate BCB for (3+3) annulation, and related reactions has been realized recently.⁸⁻¹⁰ The construction of these highly decorated cyclic frameworks, along with the diverse reactivity patterns of BCBs, will be presented.