ITbM-GTR Seminar

Ladder Polymer Science

New Strategies in Stereoselective and Sustainable Synthesis

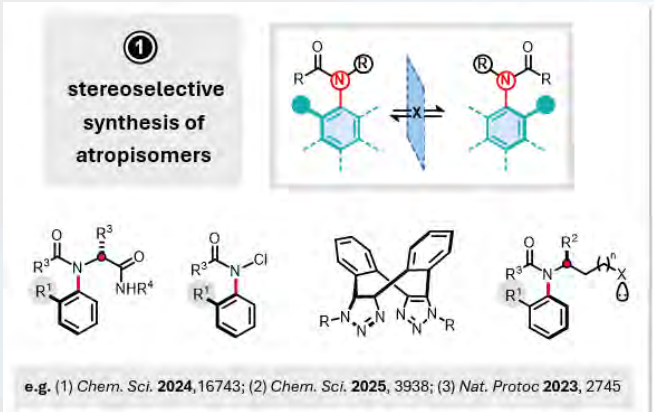
Dr. Roly J. Armstrong

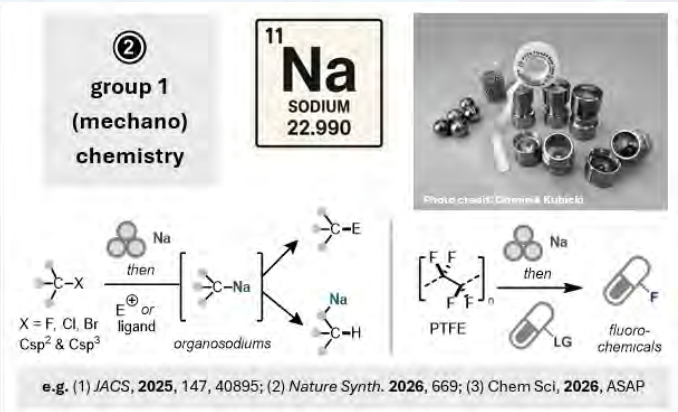
Professor, Newcastle University, UK

Date: Monday, Sep. 7th, 2026
Time: 10:30~12:00

Venue: Lecture room, ITbM
Language: English

Recent research in our group has focused on developing new strategies to address challenging problems in organic synthesis, spanning the stereoselective synthesis of axially chiral molecules and the development of more sustainable methods based on abundant Group 1 metals. The first part of this lecture will describe our work on C–N and N–N atropisomeric molecules, which possess chirality through restricted rotation about carbon–nitrogen or nitrogen–nitrogen bonds, respectively. These compounds are attracting increasing interest because of their applications in medicinal chemistry, agrochemistry and materials science, yet stereoselective methods for their preparation remain comparatively underdeveloped. I will present our recent approaches to the synthesis of atropisomeric peptide analogues, N-chloroamides and sulfonamides, together with a discussion of experimental and computational methods used to understand and predict their configurational stability and racemization mechanism. The second part of the lecture will describe our recent efforts to develop more sustainable synthetic methods using sodium. This will include the preparation and reactivity of organosodium reagents under mechanochemical conditions and the application of sodium-mediated mechanochemistry to the degradation of fluoropolymers such as PTFE.





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