

Students' Annual Seminar

Novel aryl thiol catalysts for Native Chemical Ligation

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The native chemical ligation (NCL), dovetails a peptide thioester and a Cys-peptide, having cysteine at the N-terminus, leading to the formation of a native peptide (amide) bond. Despite its usefulness, the slow trans-thioesterification step hinders the reaction's rate, especially with alkyl thioesters. To address this, mercaptophenylacetic acid (MPAA) has been widely used as a catalyst due to its favourable properties. However, high cost and limited availability have prompted the search for alternative aryl thiols. This study introduces various aryl thiol catalysts designed to be more cost-effective, having better solubility profile in aqueous buffer, and possess superior nucleophilicity compared to MPAA, aiming to enhance the overall kinetics of the NCL reaction. However, aryl thiol catalysts fail to facilitate one-pot desulphurisation as they quench the radical formed during the desulphurisation reaction. In this talk, I will discuss the synthesis of various aryl thiols and their studies for NCL as well as a method for one-pot desulphurisation in the presence of any aryl thiol.

Friday, Feb 16th 2024

14:00 Hrs (Tea / Coffee 13:45 Hrs)

Seminar Hall, TIFR-H