Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

Development of Tandem One-Pot Methodologies for The Synthesis and Functionalisation of Bio-relevant *N*-Heterocycles

Firdoos Ahmad Sofi

NIPER, Mohali

The C-C and C-N bond formation reactions have gained tremendous importance in the pharmaceutical industry for the late-stage functionalisation of bio-relevant scaffolds. The C-C and C-N bond formation was achieved by using simple and commercially available starting materials. The established protocols were applied for the construction and functionalisation of bio-relevant *N*-heterocycles, viz., quinazolinones, benzimidazoles, quinoxalines, and imidazopyridines. The metal-free synthesis of 2-aryl-3-arylmethylquinazolin-4(3H)-one was achieved through ionic liquid-mediated and I_2-promoted tandem oxidative cyclo-condensation of isatoic anhydrides with arylmethyl amines. Visible light promoted tandem dehydrogenation-deaminative cyclocondensation under aerobic conditions for the synthesis of 2-aryl benzimidazoles and quinoxalines from *o*-phenylenediamnes and arylmethyl/ethyl amines. Palladium acetate-catalysed aminocarbonylation of 2-phenylimidazo [1,2-a]pyridines was realized using chloroform as a carbon monoxide source and their mechanistic studies. Copper-catalysed oxidative conversion of imidazopyridines into *N*-pyridinylamides was achieved via tandem C-C and C-N bond cleavages under oxidative reaction conditions. In a nutshell, we aimed to deliver synthetic targets for the generation of lead molecules with potential therapeutic applications.

Friday, May 31st 2024

14:30 Hrs