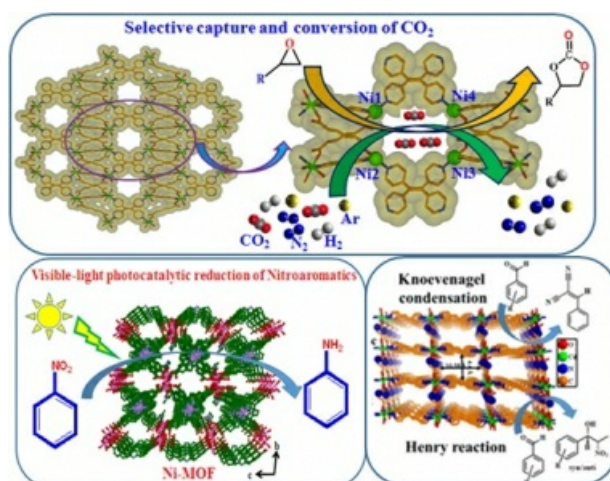


*Design of porous metal organic frameworks (MOFs) for heterogeneous catalysis*C. M. Nagaraja¹, Bharat Ugale¹, Sandeep Dhankar¹¹Chemistry, Indian Institute Of Technology Ropar, Ropar, India

E-mail: cmnraja@iitrpr.ac.in

Crystalline porous metal-organic frameworks (MOFs) have attracted an immense attention in the recent years not only due to their fascinating capability to form diverse structural architectures but also for their novel properties. The application of crystal engineering has led rational design of MOFs with well-defined architectures for a particular application. The possibility to tune the pore size and introduce desired functionality makes MOFs an important class of porous materials for selective gas storage and heterogeneous catalytic applications. Modulation of the pores with basic functionalities as resulted MOFs with potential applications for selective storage of CO₂. However, there is a growing interest for selective capture and utilization of CO₂ has as an abundant C1 source to synthesize value-added chemicals. Therefore, it is highly desirable to develop MOFs capable of selectively capture and convert CO₂ into useful organic compounds at mild conditions. In this context, we have synthesized porous MOFs based on Ni(II)/Co(II) ions with pores decorated with unsaturated metal ions which exhibit efficient capture and conversion of carbon dioxide into cyclic carbonates. In addition, towards development MOFs for visible-light-assisted photocatalytic applications we have developed photo-responsive MOFs which act as efficient heterogeneous recyclable catalysts for photocatalytic reduction of nitroaromatics into their corresponding amines. Further, construction of homochiral MOFs by utilizing chiral aminoacids as linkers and their utilization as heterogeneous catalysts for Henry reaction has also been developed in our lab, these results will be presented.

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Keywords: [Metal-organic frameworks](#), [selective CO₂ capture and conversion](#), [heterogeneous catalysis](#)