

Metal Organic Framework Materials (MOFs): Synthesis and Environmental Applications

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Environmental pollution has been a serious concern since industrial revolution. Despite all scientific and technological advancement, because of divers nature of environmental pollutants; developing affordable, yet effective materials for environmental remediation is a challenge. Zeolitic molecular sieves have found a wide range of industrial applications that contributes to a very large segment of the global economy. Synthetic zeolites are preferred over their natural counterparts because of their high purity and the possibility of tuning their properties using different modification techniques.

Scientists mimicked zeolite structure by taking advantages of organic linkers and metal clusters in order to synthesize a new class of organo-metallic materials; known as metal organic frameworks (MOFs). These materials exhibit a much larger surface areas and great potential for different application as adsorbent and catalysts.

In this talk, some of my research group's works on MOFs synthesis and their environmental applications will be discussed. The focus will be on our works in the past 12+ years in Canada (at UWO and UNBC), on the development of intensified techniques for synthesis of porous MOF and their application in removal of a wide array of pollutants from contaminated air and water.

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