

## ABSTRACT

Since last two decades MOFs are the center of the attention for research purpose. Metal organic frameworks (MOFs) are the hybrid of metal and organic bridging ligand. MOFs and their derivatives are vital class of materials with broad range of its applications. Metal-organic framework is synthesized through the solvothermal route at 120 °C. The calcined material that is obtained by the MOF precursor is analyzed and characterized by the different techniques including Fourier transform infrared spectroscopy (FTIR), Power X-ray diffraction (PXRD), UV-spectroscopy, GC-MS. During last decade climate has adversely changed due to the pollution specially greenhouse gases have played crucial role in global warming. Majorly carbon dioxide gas has worst effect on the climate change. MOFs are used as catalyst for the fixation of CO<sub>2</sub> in order to control climate change due to greenhouse gas. MOFs used to degrade the different dye into simple components. Along with the fixation of CO<sub>2</sub> and degradation of dyes, reduction of chromium (VI) to chromium (III). Cr(VI) is ubiquitous persistent environmental contaminant and carcinogenic when added to the aquatic life it cause many problems for the aquatic life. It must convert to less toxic form before entering to the aquatic life. Past literature review elaborate that reduction of Cr(VI) to the Cr(III) is a pseudo 1<sup>st</sup> order reaction. This review discusses the recent research progress of MOF synthesis and its various applications.