



---

## **Abstract**

The coordination polymers, MOFs, have attracted great interest as a promising candidate for the sustainable energy and environmental remediation. In the study, five coordination metal polymers have been synthesized by using precursor tin chloride (+2), pyridine-2,4,6-tricarboxylic acid and benzene-1,3,5-tricarboxylic acid. These metal polymers were prepared by using the reflux (100°C-150°C) and sonication methods and autogenously increased pressure. The tin metal polymers were synthesized by exploiting different reaction conditions such as pH, solvents and mole ratio. The synthesized complexes were characterized by Elemental analysis and FTIR spectroscopy. The post synthetic modification of the metal polymers was executed by calcination of the compounds at 600°C for 6 hours. These tin metal complexes served as the precursor of metal oxide nanoparticles and yielded grey colour nanoparticles of tin oxide. The band gap of tin metal polymers was also calculated that falls under the range of semiconductors. Photoluminescence properties are also explored. Furthermore, the photocatalytic potential of these metal polymers of these metal complexes was also evaluated against Methylene blue dye. The results revealed an efficient degradation of methylene blue up to 95%. The exciting results of photodegradation activity of the complexes and semiconductor's band gap values have made these complexes an ideal candidate for their potential applications in electronic devices and environment remediation

---