

## **Microwave assisted synthesis of porous ZnO/SnS heterojunction and its application in visible light degradation of ciprofloxacin**

### **ABSTRACT**

Porous ZnO/SnS heterojunctions were successfully synthesized via microwave-assisted heating of aqueous solutions containing different amounts of SnS precursors ( $\text{SnCl}_2$  and  $\text{Na}_2\text{S}$ ) in the presence of fixed amount of  $\text{ZnCO}_3$  nanoparticles. The experimental results revealed that the heterojunctions exhibited much higher visible light-driven photocatalytic activity for the degradation of the ciprofloxacin than pure SnS nanocrystals. The photocatalytic degradation efficiency ( $1-C_t/C_0$ ) of the pollutant for the most active heterogeneous nanostructure is about four times more efficient than pure SnS. The enhanced photocatalytic efficiency is ascribed to the synergic effect of high photon absorption and reduction in the recombination of electrons and holes because of efficient separation and electron transfer from the SnS to ZnO nanoparticles.

**Keyword:** ZnO/SnS heterojunctions; Microwave-assisted heating; Synthesized