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# Sonochemical synthesis and structural characterization of a new Zn(II) nanoplate metal–organic framework with removal efficiency of Sudan red and Congo red

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**Abstract:** A 3-D Zn(II) based metal–organic framework (MOF) of  $[\text{Zn}_4(\text{oba})_3(\text{DMF})_2]$  was synthesized using the nonlinear dicarboxylate ligand, 4,4'-oxybis(benzoic acid) ( $\text{H}_2\text{oba}$ ) via sonochemical and solvothermal routes. IR spectroscopy, single-crystal X-ray crystallography, scanning electron microscopy, and X-ray powder diffraction were used to characterize these MOF samples. The effect of different times of irradiation and various concentrations of primary reagents were experimented for obtaining monotonous morphology. The results show that uniform nanoplates can be achieved by increasing the time of irradiation and decreasing the concentration.  $\text{N}_2$  adsorption was applied to examine the effect of synthesis method on porosity of the framework. Also Congo red and Sudan red dyes were employed to explore the efficiency of this MOF in removal of the dye pollutants.

**Keywords:** Ultrasonic; MOF; Congo red; Sudan red

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