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# Ultrasound-assisted preparation of a nanostructured zinc(II) amine pillar metal–organic framework as a potential sorbent for 2,4-dichlorophenol adsorption from aqueous solution

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## Abstract

Using a green and simple route with ultrasound illumination under atmospheric pressure and at room temperature, the nanosized preparation of a Zn(II) metal–organic framework,  $[\text{Zn}(\text{ATA})(\text{BPD})]_{\infty}$  (ATA = 2-aminoterephthalic acid), BPD = 1,4-bis(4-pyridyl)-2,3-diaza-1,3-butadiene), having nano-plate shape and 3D channel framework, was considered and the product was named as compound 1. The X-ray diffraction (XRD), scanning electron microscopy (SEM), IR spectroscopy, Brunauer–Emmett–Teller (BET), and thermogravimetric analysis (TGA) were used for characterization of the synthesized micro/nano-structures. Further, impact of different sonication times and initial reagent contents on the shape and size of the micro/nano-structures was investigated. The results show that under ultrasound irradiation non-aggregated plates with uniform morphology can be obtained with content of  $[0.0125]$  M of the initial reagents in the presence of triethylamine (TEA) at 120 min. Moreover, through  $\text{N}_2$  adsorption, effect of the

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