Effect of the Guest Solvent Molecules on Preparation of Different Morphologies of ZnO Nanomaterials from the [Zn₂(1,4-bdc)₂(dabco)] Metal-Organic Framework

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The host and the apohost framework of [Zn₂(1,4-bdc)₂(dabco)]·4DMF·1/₂H₂O (1·4DMF·1/₂H₂O), (1,4-bdc = 1,4-benzenedicarboxylate and dabco = 1,4-diazabicyclo[2.2.2]octane) were used as templates for preparation of ZnO nanomaterials. With calcination of the host framework of 1·4DMF·1/₂H₂O, ZnO nanoparticles could be fabricated, but by the same process on the fully desolvated framework of 1, ZnO microrods composed of ZnO nanoparticles were formed. These results indicate that with removal of the guest solvent molecules from the pores of this MOF, the tendency of nanoparticles to agglomerate increases and the role of this MOF in preparation of ZnO nanoparticles from this precursor as a template was reduced.

REFERENCES