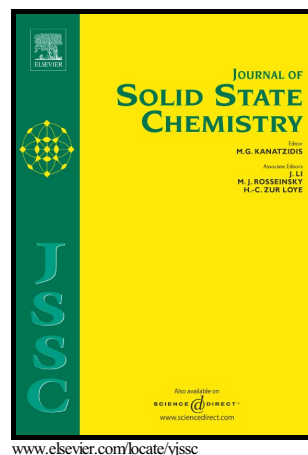


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Utilization of Pebax 1657 as structure directing agent in fabrication of ultra-porous ZIF-8

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ABSTRACT:

Ultra porous ZIF-8 particles synthesized using PEO/PA6 based poly(ether-block-amide) (Pebax 1657) as structure directing agent. Structural properties of ZIF-8 samples prepared under different synthesis parameters were investigated by laser particle size analysis, XRD, N₂ adsorption analysis, BJH and BET tests. The overall results showed that: 1- The mean pore size of all ZIF-8 samples increased remarkably (from 0.34 nm to 1.1-2.5 nm) compared to conventionally synthesized ZIF-8 samples. 2- Exceptional BET surface area of 1869 m²/g was obtained for a ZIF-8 sample with mean pore size of 2.5 nm. 3- Applying high concentrations of Pebax 1657 to the synthesis solution lead to higher surface area, larger pore size and smaller particle size for ZIF-8 samples. 4- Both, Increase in temperature and decrease in molar ratio of MeIM/Zn²⁺ had increasing effect on ZIF-8 particle size, pore size, pore volume, crystallinity and BET surface area of all investigated samples.

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