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Mesoporous Material Nanofibers by Electrospinning

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Abstract : In this paper, MCM-41 mesoporous material nanofibers were synthesized by an electrospinning technique. The nanofibers were characterized by scanning electron microscopy (SEM), transmission electron microscopy (TEM), x-ray diffraction (XRD), and nitrogen adsorption–desorption measurement. Tetraethyl orthosilicate (TEOS) and polyvinyl alcohol (PVA) were used as a silica source and fiber forming source, respectively. TEM and SEM images showed synthesis of MCM-41 nanofibers with a diameter of 200 nm. The pore diameter and surface area of calcined MCM-41 nanofibers was 2.2 nm and 970 m²/g, respectively. The morphology of the MCM-41 nanofibers depended on spinning voltages.

Keywords : electrospinning, electron microscopy, fiber technology, porous materials, X-ray techniques
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