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用电泳沉积技术制备空心**Silicalite-1**沸石纤维

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摘要 通过电泳沉积技术(EPD)将纳米silicalite-1沸石组装到碳纤维模板上并经焙烧除去模板，成功制备了孔壁由纳米沸石构成的空心沸石纤维(hollowzeolitefibers)，并系统研究了制备条件。发现纳米粒子的表面电荷和电泳电压是制备沸石涂层和空心沸石纤维的关键因素；纳米沸石胶液的pH值决定了纳米粒子的表面电势的正负和大小；其它条件，如电泳时间、胶液浓度也对沸石涂层的形成有影响。红外和XRD图谱证明所得空心沸石纤维孔壁只由纳米silicalite-1构成。

关键词 电泳 沉积 沸石 纳米相材料 纤维

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Fabrication of hollow zeolite fibers by electrophoretic assembly of nanosilicalite-1

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Abstract Hollow zeolite fibers (abbreviated as HZF) have been successfully fabricated using electrophoretic deposition (EPD) technique with carbon fibers as templates and nanosilicalite-1 as building blocks, followed by removal of the templates by calcinating the zeolite- coated carbon fibers. Dense and complete zeolite deposition on carbon fibers is an essential premise for the preparation of intact HZFs. The formation of zeolite coating depends largely on the applied voltages and the surface charge of nanozeolites, which can be adjusted by the pH of the colloidal solution. In addition, deposition time and colloidal solution concentration also influence the deposit process. The structure of calcined HZFs has been characterized by XRD and IR.

Key words ELECTROPHORESIS SEDIMENTATION ZEOLITE NANOPHASE MATERIALS FIBERS

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