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材料化学工程与纳米技术

含有球状和柱状超微孔SiO_2的一步合成与表征

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摘要 以常用的十二烷基胺为模板剂，首次以3－巯丙基－三甲氧基硅烷和三氟甲基三甲基硅烷为共模板剂，在乙氰－水溶剂中，合成了高比面积、高热稳定性、具有球状和柱状新颖形貌的超微孔分子筛，并用氮气吸附脱咐，XRD，FT－IR，SEM和TG－DSC等对其结构进行了表征，推测了合成过程.

关键词

超微孔SiO_2 球状和柱状 硅烷

分类号

Direct synthesis and characterization of super-microporous SiO_2 with spherical and cylindrical shapes

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Abstract

The direct synthesis of templated super-microporous silica with spherical and cylindrical shapes was achieved in a water/acetonitrile/n-dodecylamine system, using 3-mercaptopropyltrimethoxysilane and 3-trifluoromethyltrimethylsilane as co-template.The benefits of this system to prepare such silicas were high surface area, much enhanced wall thickness, and consequently to greater structural stability.The particles obtained from this route were spherical and cylindrical.The sample was characterized by using N_2 adsorption /desorption, XRD, FTIR,SEM , TG-DSC and ^{13}C CP MAS NMR methods，and the process of the direct preparation was given.

Key words

super-microporous SiO_2 spherical and cylindrical silane

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