

研究论文

油包水型微乳中层柱状磷酸锆的制备与表征

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摘要 以氧氯化锆($ZrOCl_2 \cdot 8H_2O$)和磷酸三丁酯(C_4H_9O)₃PO为原料, 在正庚烷(C_7H_{10})-十六烷基三甲基溴化铵(CTAB)/正丁醇(C_4H_9OH)-水的反向微乳体系中制备了 $Zr(HPO_4)_2 \cdot H_2O$, $(H_3O)^+Zr_2(PO_4)_3$ 和 $Zr(HPO_4)_8 \cdot H_2O$ 三种不同结构的层柱状磷酸锆. 运用扫描电子显微镜(SEM)、透射电子显微镜(TEM)和X射线衍射仪(XRD)等仪器对产物进行了表征, 考察了不同微乳组成对磷酸锆结构及尺寸的影响. 结果表明, 微乳体系对层柱状磷酸锆的可控制合成具有广泛意义.

关键词 [磷酸锆](#) [反向微乳体系](#) [油包水微乳](#)

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Preparation and Characterization of Layered Zirconium Phosphates Based on Water-in-oil Microemulsion

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Abstract Layered zirconium phosphates [$Zr(HPO_4)_2 \cdot H_2O$, $(H_3O)^+Zr_2(PO_4)_3$ and $Zr(HPO_4)_8 \cdot H_2O$] were synthesized in water/oil(W/O) microemulsion system containing heptane, CTAB/butanol and water. X-ray diffraction(XRD), transmission electron microscopy(TEM) and scanning electron microscopy(SEM) were utilized to characterize the structure, morphology and size. It was found that the preparation of zirconium phosphate in W/O microemulsion could control structure based on the microemulsion composition(i.e. three layered zirconium phosphates obtained with different ratio of water and oil) and morphology based on the reacted conditions(i.e. the size and morphology of α -zirconium phosphate can be controlled with different reacted time and temperature in microemulsion). We believe that the simple synthetic method based on microemulsion would benefit the controllable synthesis of zirconium phosphates greatly.

Key words [Zirconium phosphates](#) [Reverse microemulsion](#) [Water in oil microemulsion](#)

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