

## 低pH值条件下纤维状 $ZrO_2$ 水合物的制备

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摘要 以无机盐氧氯化锆( $ZrOCl_2 \cdot 8H_2O$ )为原料,  $H_2O_2$ 为水解促进剂, 乙醇为溶剂,

低pH值条件下制备了纤维状 $ZrO_2$ 水合物. 运用FT-IR、TG、XRD研究了 $ZrO_2$ 水合物的组成、结构和热稳定性,

用光学显微镜、FESEM对 $ZrO_2$ 水合物的形貌及其形成机理进行了分析. 结果表明,  $ZrO_2$ 水合物分子简式为 $Zr(\mu-$

$OH)_2(OH)_2 \cdot 2H_2O$ ; 经 $80^\circ C$ 干燥的 $ZrO_2$ 水合物为非晶态, 随热处理温度的升高,

物相结构由亚稳四方相向单斜相转变;  $ZrO_2$ 水合物是由尺寸较小的短纤维通过表面羟基的氢键作用,

按一定方式聚集而成的尺寸较大的纤维簇.

关键词 [氯氧化锆](#) [ZrO2水合物](#) [水解](#) [制备](#)

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## Preparation and Formation Mechanism of Fibrous Hydrated Zirconia

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**Abstract** Hydrated zirconia was prepared at low pH values with  $ZrOCl_2 \cdot 8H_2O$  as raw material,  $H_2O_2$  as hydrolysis promoter and ethanol as solvent. FT-IR, TG and XRD were applied to study the components, structure and heat-stabilization of hydrated zirconia. Light microscope and FESEM were used to analyze the microcosmic structure of hydrated zirconia, its formation mechanism was also discussed. The results show that the molecular formula of hydrated zirconia is  $Zr(\mu-OH)_2(OH)_2 \cdot 2H_2O$ . The hydrated zirconia is amorphous, and as the treating temperature rising, it will turn from metastable tetragonal phase to monoclinic phase. The hydrated zirconia is fiber cluster composed of small short fibers *via* hydrogen bonds.

**Key words** [zirconia chloride](#) [hydrated zirconia](#) [hydrolysis](#) [preparation](#)

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