

导电ZrO<sub>2</sub>复合纳米材料的制备和表征

王利军,郭昌文,黄茜丹,赵伟,李全芝

复旦大学化学系,上海(200433)

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**摘要** 用溶胶-凝胶方法,结合后焙烧处理,得到系列ZrO<sub>2</sub>纳米材料及其与碳膜组成的复合材料,XRD,Raman,SEM及电性能测试表明:复合ZrO<sub>2</sub>纳米材料有较小的粒径(6.85 nm),晶型为立方相,有较均匀的二次粒子分布,其中碳以碳膜形式存在,复合材料有好的导电性能。将碳膜在823K氧化后,立方相转化为四方体相,粒径增加,无导电性能。

**关键词** [氧化锆](#) [复合材料](#) [纳米相材料](#) [溶胶-凝胶法](#) [X射线衍射分析](#) [扫描电子显微镜](#) [导电性](#)

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## Preparation and Characterization of Conductive ZrO<sub>2</sub> with Combined Nano-Structure

Wang LiJun,Guo Changwen,Huang Xidan,Zhao Wei,Li Quanzhi

Department of Chemistry, Fudan University,Shanghai(200433)

**Abstract** Series of ZrO<sub>2</sub> nanomaterials and their combined materials with carbon membrane were obtained by Sol-Gel method followed by post- calcination. The test results of XRD, Raman and SEM show that the nanomaterials has a small size as 6.85 nm with cube phase, well- organized secondary distribution particles, and the combined materials exhibit good conductivity with carbon existing in membrane form. After carbon membrane was oxidated at 823 K, the cubic ZrO<sub>2</sub> was transformed into insulated tetragonal ZrO<sub>2</sub> with crystal size increasing.

**Key words** [ZIRCONIUM OXIDE](#) [COMPOSITE MATERIALS](#) [NANOPHASE MATERIALS](#) [SOL-GEL PROCESS](#) [XRD](#) [SEM](#) [ELECTRICAL CONDUCTIVITY](#)

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