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热处理制度对氧化锆纤维布组织的影响

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摘 要：采用前驱体浸渍转化法制备氧化锆纤维布制品，利用X射线衍射和扫描电镜研究制备过程热处理制度对样品组织结构的影响。结果表明：氧化锆纤维布制品具有与前驱体纤维布相同的物理形貌，其单根纤维光滑饱满，直径约为5~8 μm；组成纤维布的主晶相为t-ZrO_2，平均晶粒粒径约为15~30 nm；降低烧结温度、加快升温和冷却速率，均有利于细化晶粒，减少次物相m-ZrO_2和c-ZrO_2的产生，但在一定程度上降低制品的致密度。

关键字： 氧化锆；纤维布；电池隔膜；热处理

Effect of heat treatment on microstructure of zirconia cloth

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Abstract: Zirconia cloth was prepared by precursor process that oxidizes hydrated cellulose textiles impregnated with zirconium salts. The effect of heat treatment on the phase and microstructure of the cloth was studied by XRD and SEM. The results show that zirconia cloth has the same morphology with the precursor. Any individual fiber in the cloth has smooth surfaces and full core with the diameter of about 5−8 μm. The cloth is mainly consisted of tetragonal ZrO2 with average grain size of about 15−30 nm. With the decrease of sintering temperature and increase of heat rate and cooling rate, the grain size is fined, the amount of impurity phase m-ZrO2 and c-ZrO2 decreases, while the density is loosed.

Key words: zirconia; fiber cloth; battery separator; heat treatment

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