

Polymer Derived Ceramic Seals for SOFC Application

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Abstract

Polymer derived ceramic composites have been developed for SOFC seals. The formation and properties of ceramic composite derived from the mixture with polysiloxane and ceramic filler were investigated. In the presence of ceramic filler materials such as ZrO_2 and B_2O_3 , the thermal properties of ceramic composite could be controlled. The mixtures with polymethylsiloxane and ceramic fillers were prepared and their conversion to ceramic composites by annealing in N_2 atmosphere were studied. Microcrystalline composites with ceramic filler embedded in silicon-boron-oxycarbide glass matrix were formed. The thermal expansion behaviors and sealing characteristics such as leak rate were measured and discussed.