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Preparation and characterization of mullite tubular membranes

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ABSTRACT

Sintering of tubular extruded kaolin as microfilter membranes was investigated. Design of Experiments was carried out using Taguchi method. Effects of sintering temperature (1,150, 1,225 and 1,300°C) and time (1, 3 and 5 h), calcination temperatures of 550 (0, 2 and 4 h) and 950°C (1, 3 and 5 h) with heating rate of 2°C/min were studied. XRD and mercury porosimetry analysis were performed to characterize the membranes. Different characteristics including mechanical strength, weight loss, linear and cross shrinkage, and water permeation were also studied. Membranes were found to have good properties as microfilters and/or supports for different zeolite membranes.

Keywords: Mullite; Tubular membrane; Microfilter; Sintering; Membrane properties

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