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Abstract

We report a unique technique for fabricating a uniform and crack-free surfactant-templated silica membrane on a porous alumina support. The porous alumina support was first subjected to a heat-sealing treatment, and then a mesoporous silica membrane derived from a surfactant template was deposited thereon by sol-gel processing. The surface topography of the silica membrane has been characterized. With the aid of the sealing procedure, an air-cushion was formed to provide sufficient additional supporting force to support the precursor film and prevent permeation of the precursor into the pores. The sol-gel deposition on the porous alumina support formed a uniform, crack-free silica membrane.

Keywords: Inorganic membranes; Porous support; Heat-sealing treatment; Sol-gel preparation; Thin films;

1. Introduction

Inorganic membranes have attracted a great deal of attention due to their superior mechanical strength and thermal and chemical stabilities [1]. Consequently, they are used in many fields, such as liquid and gas

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