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Multi-Layer Silica Alumina Membrane Performance for Flue Gas Separation

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Abstract : With the objective to create technologically advanced materials to be scientifically applicable, multi-layer silica alumina membranes were molecularly fabricated by continuous surface coating silica layers containing hybrid material onto a ceramic porous substrate for flue gas separation applications. The multi-layer silica alumina membrane was prepared by dip coating technique before further drying in an oven at elevated temperature. The effects of substrate physical appearance, coating quantity, the cross-linking agent, a number of coatings and testing conditions on the gas separation performance of the membrane have been investigated. Scanning electron microscope was used to investigate the development of coating thickness. The membrane shows impressive perm selectivity especially for CO2 and N2 binary mixture representing a stimulated flue gas stream

Keywords : gas separation, silica membrane, separation factor, membrane layer thickness
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