



## Hydrogen separation membrane encapsulating Pd nanoparticles in a silica layer

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Received 31 July 2009; Accepted 22 November 2009

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### ABSTRACT

A novel composite membrane encapsulating Pd nanoparticles in a silica layer was prepared. The membrane showed H<sub>2</sub> selectivity in an equimolar mixture of H<sub>2</sub> and CO<sub>2</sub>. The Pd nanoparticles were synthesized within a silica layer having a thickness of 1 μm. This composite structure showed good stability and could significantly reduce the amount of Pd used in the membrane.

*Keywords:* Hydrogen; Palladium; Mesoporous silica

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