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Spray Pyrolysis Fabrication of Nanoporous Material

IP Status: Issued US Patent; **Application #:** 10/167,346

Spray Pyrolysis Techniques for Fabrication of Nanoporous Particles

A method has been developed to fabricate nanoporous particles using spray pyrolysis techniques. The method produces nanoporous material with pore sizes from 2 nm to 10 nm with potential applications as molecular sieves, filtration and purification media.

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Low Cost Nanoporous Material for Molecular Sieve, Filtration and Purification Applications

The technique involves spray pyrolysis of a precursor salt above its decomposition temperature and a matrix salt (typically an alkali metal salt) below its melting point. The alkali metal salt acts as a template which can be washed away once the precursor has decomposed, leaving the desired material with pores left behind by the alkali metal salt. The method offers an economical pathway to nanoporous particle fabrication. So far, nanoporous alumina particles have been produced using this method.

BENEFITS OF SPRAY PYROLYSIS TECHNIQUES:

- Reliable fabrication of nanoporous materials with pore sizes from 2 nm to 10 nm.
- Potential for molecular sieve, filtration and purification applications.
- Less expensive (anticipated) than current spray pyrolysis techniques.

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