Pacific Northwest NATIONAL LABORATORY

Proudly Operated by Battelle Since 1965

Battelle Number(s):

12873

Patent(s) Issued

Available for licensing in all fields

Available Technologies

Hydroetching and Facile Functionalization of Aerogels using Moist Supercritical Fluids

SUMMARY

The present invention covers the use of supercritical fluids (principally supercritical carbon dioxide and small amounts of water) to etch the interior surfaces of aerogel materials.

Subsequent analyses indicate that this treatment results in an increase in the surface area and a simplification of the pore structure distribution of the aerogel materials. Average pore diameter increases and bottleneck pore diameter increases. Silanation of the materials using supercritical carbon dioxide after hydroetching resulted in a 70-130% weight increase, indicating that the aerogels can now be effectively functionalized.

This functionalization indicates that the potential exists to produce low-cost aerogel materials with loading capacities similar or superior to much more expensive mesoporous ceramics.

U.S. DEPARTMENT OF ENERGY

Patents & Intellectual Property

» Patent #: 6,812,259

Technology Portfolio(s)

» Supercritical Fluid Processing

Potential Industry Applications

» Chemicals

Eric C. Lund
Pacific Northwest National Laboratory
(509) 375-3764
eric.lund@pnnl.gov
http://availabletechnologies.pnnl.gov

Pacific Northwest
NATIONAL LABORATORY

Proudly Operated by Battelle *Since 1965*