

New zeolite is discovered

October 18 2006

A Spanish-led team of geologists has reported discovering a porous material with a new, highly open framework structure.

The material found by Avelino Corma and colleagues from the Politecnica University of Valencia is a zeolite, one of a family of materials also known as molecular sieves.

The researchers say the new material exhibits pore systems running in two different directions -- one pore system has extra-large pores (12.2 angstroms) connected crosswise by the second pore system, which has medium-sized pores (6.1 angstroms by 4.3 angstroms).

Zeolites are used in industry to catalyze important reactions, to store and separate gases, and to remove contaminants. The new material, called ITQ-33, has a very high storage capacity and its large pores allow unusual catalytic activity.

In some combinations, the researchers said, the cracking of gas and oil is better when catalyzed by ITQ-33 than by zeolites currently used commercially.

Corma, along with Raul Lobo of the University of Delaware, discovered the unusual conditions needed to synthesize the material using high-throughput techniques that allow chemists to sample a wide range of possible synthesis conditions.

The study appears in the current issue of the journal Nature.

Copyright 2006 by United Press International

Citation: New zeolite is discovered (2006, October 18) retrieved 10 April 2024 from
<https://phys.org/news/2006-10-zeolite.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--