



2nd year ENSCL

Academic year 2009-2010

SUBJECT N°3

Contact: Murielle Rivenet (murielle.rivenet@ensc-lille.fr)

Zeolites: synthesis and characterization

Zeolites are microporous crystalline solids with well-defined structures. Generally they contain silicon, aluminium and oxygen in their framework and cations, water and/or other molecules within their pores. Many occur naturally as minerals, and are extensively mined in many parts of the world. Others are synthetic, and are made commercially for specific uses, or produced by research scientists trying to understand more about their chemistry.

Because of their unique porous properties, zeolites are used in a variety of applications with a global market of several million tonnes per annum. In the western world, major uses are in petrochemical cracking, ion-exchange (water softening and purification), and in the separation and removal of gases and solvents. Other applications are in agriculture, animal husbandry and construction. They are often also referred to as molecular sieves.

The present work aims to synthesize and characterize zeolites. The first part is a bibliographic searching focusing on:- Zeolites: structures, framework type code, synthesis methods, properties and applications – Microporous and mesoporous solids... - physicochemical analysis.

The students will support on the results of their bibliographic searching to define the experimental parameters that will be used during the practical part of their work (composition of the studied zeolites, synthesis and characterization methods ...).