

## CHARACTERIZATION OF MESOPOROUS MATERIALS USING AREA DETECTOR BY TRANSMISSION XRD

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A Series of libraries for MCM and SBA mesoporous type materials were synthesized by combinatorial approach using a Cavro Robot. A Bruker D8 Discover with Gaads was used as high-throughput combinatorial screening tool for the evaluation of mesoporous order of the materials. For this application a special sample holder was designed in order to mapping and measure the library. The beam, Cu-K $\alpha$  radiation, and the Area Detector were aligned at the 0-0 position for having a transmission configuration, and a stopper X-Ray beam was used. The diffraction patterns were measured in 20 seconds. In order to be able for resolving the low angle diffraction rings the Area Detector was placed at 30 cm position. It was found that for MCM materials doped with different cations the perfect hexagonal pore arrangement, showed in fig. 1a, is modified. In addition, the amount of non ordered porous material can be qualitatively observed, and it is proportional to brightness that appears between the beam stopper and the 100 reflection ring, and it is a function of type and concentration of cation used as dopant. In contrast to the XRD pattern obtained by Bragg-Brentano configuration, the Area Detector Diffraction pattern is very easy to measure and visualize the (110), (200), (210) and (300) reflections with very low intensity. The asymmetry observed in the (100) reflection ring is due to the Göbel Mirror collimator used in order to overcome the sample preparation.

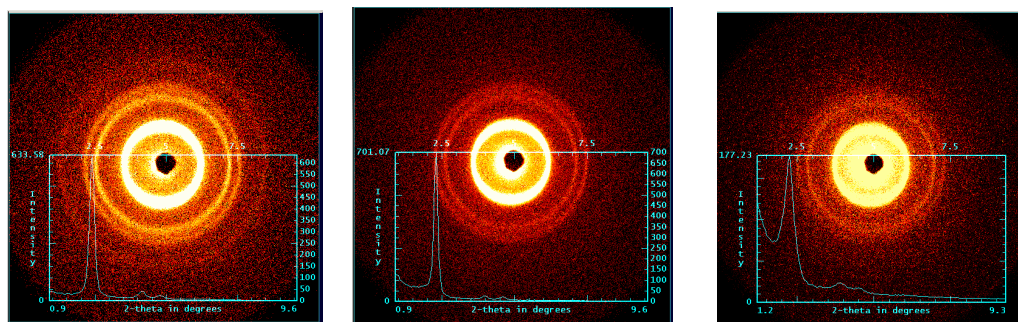


Fig. 1 MCM type materials, a) SiO<sub>2</sub>, b) SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> and c) SiO<sub>2</sub>-ZrO<sub>2</sub>.