

## ANILINE ADSORPTION AND POLYMERIZATION OVER GALLIUM MODIFIED MESOPOROUS MATERIAL

**María Laura Martínez\***, Lorena Paola Rivoira, Andrea Raquel Beltramone, Oscar Anunziata

*Centro de Investigación en Nanociencia y Nanotecnología (NANOTEC), Facultad Regional Córdoba, Universidad Tecnológica Nacional. Maestro López y Cruz Roja Argentina, 5016. Córdoba, Argentina.*

\*E-mail: [mmartinez@frc.utn.edu.ar](mailto:mmartinez@frc.utn.edu.ar)

In this work we study aniline polymerization over a mesoporous Ga-SBA-3 synthesized in our laboratory. In order to modify the intrinsic acidity of the mesoporous material gallium was incorporated into the structure by post synthesis wet impregnation method using gallium nitrate. Structural and textural characterization of the materials was performed by X-ray diffraction (XRD), ICP and EDX analysis, N<sub>2</sub> adsorption-desorption and BET area analysis, FTIR and scanning electron microscopy (SEM). The catalytic material presented a ratio Si/Ga=32.

Aniline is a weak organic base and an amphiprotic compound, so it can accept or donate protons. The polyaniline (PANI) exists in diverse ways presenting different chemical and physical properties. The protonated polyaniline feature the conductivity of a semiconductor material, over 100 S/cm.

Toward achieve aniline adsorption, the solid gallium silicate was exposed to aniline vapours. The aniline adsorption was studied by infrared spectroscopy and the results obtained were evaluated so as to be able to polymerize it over the mesoporous material generating a unique polyaniline-host composite with new properties. Those polyaniline/hosts composites obtained by a polymerization in-situ technique were characterized by infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis. Comparing to previous results FTIR analysis of the polyaniline/Ga-SBA-3 composite (PANI/Ga-SBA-3) showed characteristics bands attributed to the quinoidal stretching (N=Q=N) and C-C stretching of the benzene ring. The low angle XRD analysis showed that the mesoporous structure was maintained in spite of the gallium incorporation. The absence of PANI peaks and G<sub>2</sub>O<sub>3</sub> in the wide angle XRD pattern confirms that the polyaniline is adsorbed over the gallium silicate mesoporous surface and the gallium is well dispersed over the support.

**Keywords:** Gallium silicate, Ga-SBA-3, aniline, polyaniline, PANI/Ga-SBA-3.