



**Title: Chemical imaging of solid catalysts with Nano-IR spectroscopy.**

Author: Christia Jabbour

Understanding the active sites and their dynamics in solid catalysts, particularly in metal-organic frameworks (MOFs), is extremely important in order to design and develop better ones. My research project will focus on using recently acquired photoinduced force microscopy (PiFM) to chemically image MOFs. In the first phase, research will be focused towards the synthesis and characterization of newly developed block MOFs. The aim is to be able to create MOFs in blocks (non-powder form) that are ideal for gas separation, with the required chemical specifications. This will be done by trying different synthesis approaches and comparing results obtained by several spectroscopic and analytical techniques, such as SEM-EDX, ATR, UV-vis, XRD, HPLC, etc... In the next step, the work will be extended to catalytic studies, mainly focusing on catalytic reactions in the gas phase.