

CHARACTERIZATION OF SOOT ADSORPTION OF VOLATILE ORGANIC COMPOUNDS

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Soot materials have the potential of becoming important and beneficial for society, since they, in principle, can be used as porous carbon materials for different applications. They may have a lower expected storage capacity than other porous carbon materials such as activated porous carbons, but they have considerable mechanical and thermal flexibility and greater percolation properties, which can make them interesting materials for different applications in e.g. flow dynamics and control and short-term gas storage for the energy and environmental control sectors.

We have previously performed neutron imaging based *in-situ* studies of methane and ethane in soot materials at different pressures (up to 100 bar) and at different temperatures down to cryogenic conditions at the Oak Ridge National Laboratory (ORNL) High Flux Isotope Reactor CG-1D beamline that have been presented at the last Carbon conference in Madrid. Lately, we have also performed inelastic scattering measurements at the ORNL Spallation Neutron Source VISION beamline which show important new results what concern the adsorption of volatile organic compounds in soot materials. In particular, we focus on the differences between dry and wet soot materials, that have not only interesting implications for technical utilization, but also of fundamental science based perspective in relation to atmospheric and environmental studies.

Keywords: Soot materials, porous carbon, adsorption, volatile organic compounds, inelastic neutron scattering