Experimental Report

Proposal: **INTER-260** **Council:** 10/2012

Title: ILL EXPERIMENT IN INTERNAL TIME

This proposal is a new proposal

Researh Area:

Main proposer: **CZAKKEL Orsolya**

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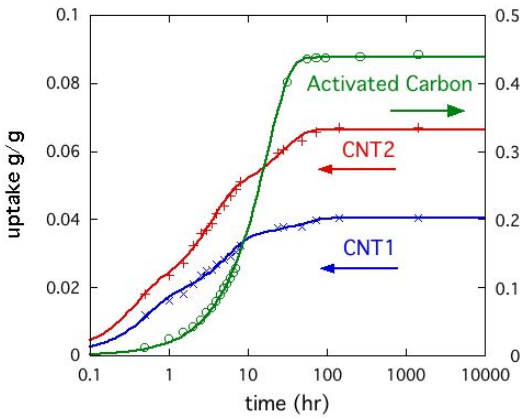
Samples: Carbon C

Instrument	Req. Days	All. Days	From	To
IN11	8	8	20/02/2013	28/02/2013

Abstract:

Experimental report on INTER-260: In situ neutron spin-echo spectroscopy on the water adsorption on carbon nanotubes

The aim of the experiment was to test the possibilities of in situ measuring the water adsorption on carbon nanotubes in the low pressure regime, with neutron spin-echo measurements. Prior to the experiment we have performed macroscopic measurements on the kinetics of the water uptake (Figure 1.) which revealed that significant amount of water is adsorbed on the carbon nanotubes (CNT1 & CNT2) already in the firs hour of the exposure.



For the NSE experiment we intended to use the HIDEN Isochema adsorption apparatus, which is available from the sample environment pool. Even though that the apparatus is designed for the low pressure operation, we encountered some problem of isolation, which caused a small He leak. As a result after each injection we had to heat up and evacuate the sample to 'erase its history', and bring the measured pressure to the starting point. As a result we lost some time from the real measurement times. However, we have measured the signal at 2 different water load level. The obtained dynamical structure functions are presented in Figure 2. Unfortunately the full decay has not been covered with the actual settings, therefore only a hint of an appearing dynamics is visible. As a conclusion we will shift our time window, and try to re-measure the dynamics, with hopefully a fully functioning adsorption apparatus.