Experimental report

17/02/2020

Proposal: **INTER-471** **Council:** 4/2019

Title: EISF of phosphoric acid (PA) and PA/water mixtures

Research area:

This proposal is a new proposal

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Experimental team:

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Samples: H3PO4
Phosphoric acid (PA) H3PO4
PA-Water mixture (H3PO4/H2O)

Instrument	Requested days	Allocated days	From	To
IN16B	5	5	31/08/2019	05/09/2019

Abstract:

This experiment failed nearly completely due to instrument problems:

The experiment had been internally scheduled for measuring fixed window scans (FWS) and QENS on PA-water mixtures up to high Q-values using the Si311 setup.

Unfortunately the IN16B experiment failed, caused by three repeated chopper failures which caused beam time losses of 4, 6 and 8 hours when the first and only sample of PA was measured. Finally the instrument had even to be shut down in order to allow for an activation decay of the PST chopper before intervention to repair its encoder. Together with this intervention this total caused a loss of 2.5 days of beam time. In addition it turned out that due to the phase instability before chopper repair the data had accumulated background which was considerably lower after repair.
Thus the small amount of data acquired needs to be critically analysed for unphysical background.

Finally a series of QENS spectra, alternating with FWS during temperature change could be measured between 280 K and 320 K, but the base temperature / resolution run at T=2K before chopper intervention is probably contaminated by background as mentioned above and a Vanadium standard is missing.

Nevertheless the data might serve as a qualitative guide for a later Si311 experiment on these samples.