

Experimental report

14/09/2019

Proposal: CRG-2593

Council: 4/2019

Title: STUDY OF GRAPHENE OXIDE THIN FILMSINTERCALATION FROM LIQUID ALCOHOL SOLUTIONS

Research area: Materials

This proposal is a new proposal

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Samples: Graphene Oxide

Instrument	Requested days	Allocated days	From	To
SUPERADAM	5	5	21/06/2019	26/06/2019

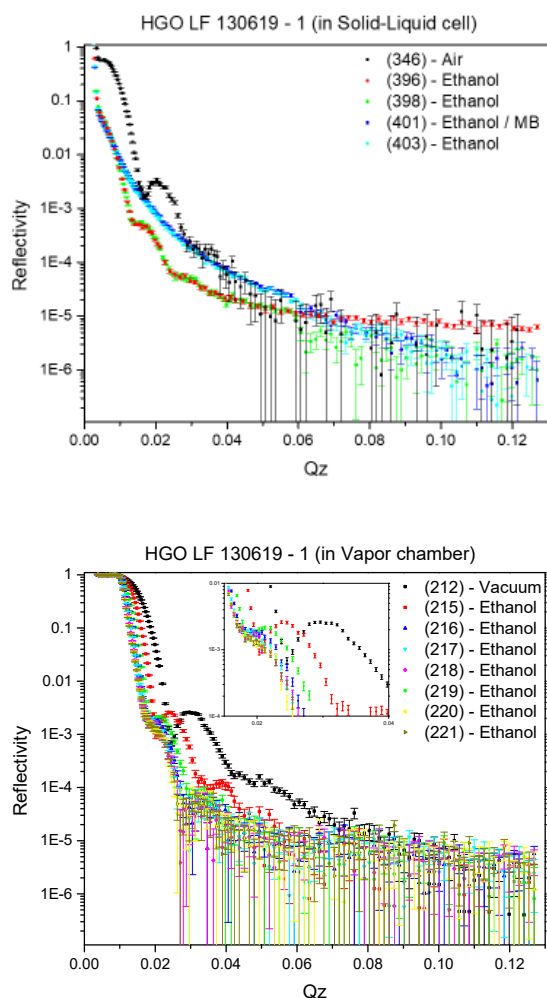
Abstract:

We propose to study selectivity in intercalation of binary mixtures of various solvents and solutions in liquid form into Graphene Oxide thin films. Results obtained in this experiment will allow to verify whether Graphene Oxide membranes can be used for nanofiltration application of ions and molecules from solvents or solutions.

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The main goal of the experiment was to reveal what solvents GO thin films can be studied in. The main obstacle in the study of GO in Solid-Liquid interface is instability of the film in some solvents while it is immersed. Experiments showed high stability of the films in liquid ethanol and d-Acetonitrile. However, the film was impossible to study after addition of Methylene Blue to Ethanol, which is rather surprising. It is possible to evaluate the amount of intercalated molecules from liquid solvent and compare this amount to the one intercalated from vapor solvents. Due to study GO in water solutions with NR.

In addition to experiments in the new Vapor chamber were performed. Preliminary results (see Figure) shows the difference between intercalation of the solvent into “wet” (containing H₂O intercalated from the air) GO film and “dried” (after storing it in vacuum without air exposure) one.



Sample 1 (49.31 layers if d-spacing in air is 8.12Å)

