

Project Report



Application No. 2021
Short title Spectroscopic study of C-H vibrational modes in hydrogenated graphene

Objectives: short, medium and long term (<250 words)

The objective was to integrate some neutron spectroscopy data sets of hydrogenated defective graphene (thermal exfoliated graphite oxide after thermal treatment in hydrogen flux) with IR spectroscopy and distinguish different C-H vibrational components, in the energy region corresponding to the C-H bending and stretching modes (100-150meV and 400meV)

Brief summary of work carried out:

We collected several IR spectra on different hydrogenated graphene flakes and other similar carbon nanostructures (asprepared graphene and nanographite, the latter obtained by ball-milling of pure graphite) in order to evidence specific C-H groups in hydrogenated graphene. Measurements, as well as sample handling, were performed in controlled atmosphere, in order to prevent any possible oxygen/air contamination of the samples.

Main achievements intended for publication <250 words

Data analysis, interpretation and peaks attribution in terms of C-H vibrations is still in progress and delicate in itself (very noisy data, low quantity of H, structural inhomogeneity of the sample, absorbant materials).! They will be part of Chiara Cavallari's PhD thesis, as complementary characterization of the samples.

Difficulties encountered <250 words

None

Further comments: No