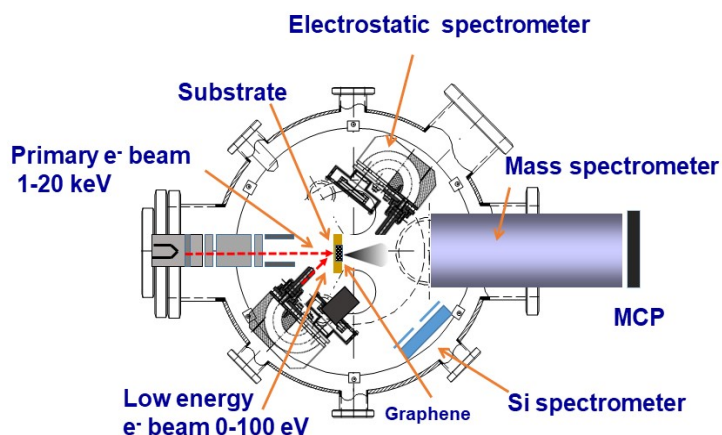


First experiment on electron-graphene interactions at 10-20 keV incident energies

The main objectives of this preliminary experiment, within the PTOLEMY Project, is to install the experimental system proposed for the 4.1 section of the proposal, to characterise the copper substrate in terms of secondary electron emission and to analyse the fragmentation induced to graphene layers deposited on the copper substrate when irradiating with 10-20 keV electrons.

The diagram of the experimental apparatus is the following,



The low energy (0-100 eV) electron will not be installed at this stage of the project.

Procedure:

- Installation of the vacuum chamber formed by a stainless still body, three turbo pumps a dry scroll pump and vacuum complements.
- Installation of the beam generation and analysis devices: electron gun (10-20 keV), Si spectrometer (liquid nitrogen cooled), quadrupole mass spectrometer (commercial – Hiden), and low energy electron spectrometer.
- Installation of the sample holder to be used with a copper foil and graphene on copper samples.
- Characterisation of the primary electron beam using the cooled Si spectrometer (energy calibration and energy resolution)
- Characterisation of the secondary electron emission from the Cu sample: energy and angular distribution of the secondary electrons
- Induced fragmentation to graphene on copper substrates: primary radiation damage and effect of the secondary electron interactions.

Expected timing:

From July 1st to December 1st