ELIps: Pump-probe spectroscopic ellipsometry and VUV material science

For the user programme for pump-probe spectroscopic ellipsometry and VUV material science the following instrument is available for user operation:

a) *Pump-probe spectroscopic ellipsometer for the NIR to NUV*
Time of availability: Ongoing.
Contact person: Shirly Espinoza, email: ShirlyJosefina.EspinozaHerrera@eli-beams.eu

b) *Commissioning of the ELIps set up for VUV spectroscopy*
Time of availability: June.
Contact person: Shirly Espinoza, email: ShirlyJosefina.EspinozaHerrera@eli-beams.eu

We are presently seeking users whom would like to study phenomena happening in solid state materials on an ultra-fast time scale using this unique instrument and work with us to explore and develop its further functionalities. To apply for using this instrument please fill in the application from on the user portal

Brief description of the available set up:
a) Pump-probe spectroscopic ellipsometry for the NIR to NUV:
Our femtosecond pump-probe ellipsometer measures the polarization response of planar samples which allows the calculation of the optical constants of the material in an excited state and during the time evolution of these states. It is a P-S-C_R-A ellipsometer. Other characteristics of the systems are:
Wavelengths pump beam: 266 nm, 400 nm or 800 nm
Spectral range probe: 350 nm - 700 nm (1.8 eV - 3.5 eV) based supercontinuum generation in CaF_2 or similar
Spectral bandwidth: approx. 25meV (prism based spectrometer)
Probe spot size at the sample: <200um
Time range: 0-5 ns
Time resolution: 100 fs
Dynamic range: 10000:1
Characteristic of the pulses from the laser: 20 to 35 fs, 1 KHz rep.rate. (Coherent Astrella or Femtolaser Femtopower support laser)
Angle of incidence: 20-90degree
Sample requirements:
Sample size: 50 um or bigger
Roughness < 350 nm
Stable in air (upgrade: in solution)
Preferentially thin films on transparent substrates that can be homogeneously excited by the pump
The transient ellipsometry spectra are obtained from a series of background-and luminescence corrected reflectance spectra.

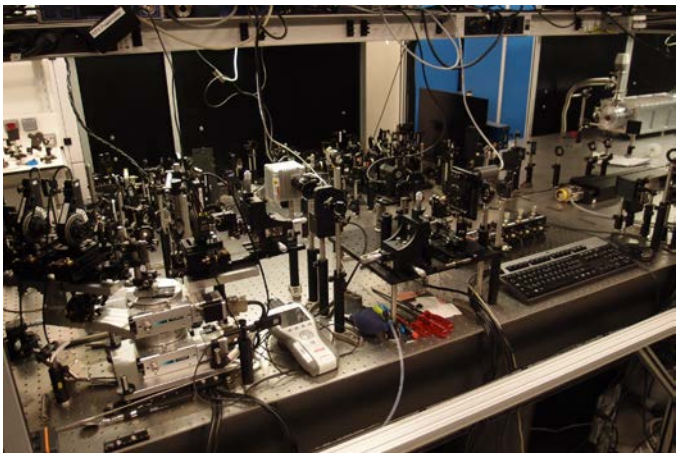

Fig: Set up for pump-probe spectroscopic ellipsometry in operation in the E1 experimental hall.

b) Commissioning of the ELIps set up for VUV spectroscopy:

We invite experienced users to assist in the commissioning of the VUV spectroscopy set up in the ELIps station. Present commissioning efforts are focussed on reflectivity and transmission capabilities. For initial commissioning the ELIps will utilize harmonics in the 20 eV photon energy range.

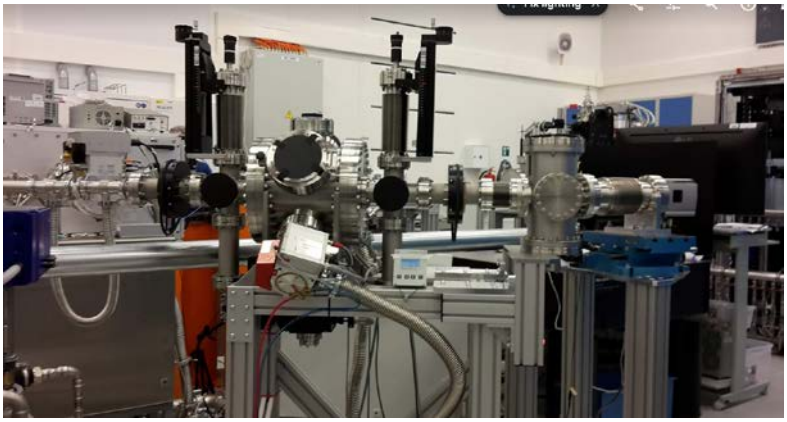

Fig: ELIps set up for VUV transmission and reflection on the HHG beamline in the E1 experimental hall.