

RESEARCH OBJECTIVE

The Dielectric Spectroscopy and High Pressure Physics Laboratory specializes on dielectric and electric measurements at combined pressure and temperature states on a wide range of materials such as dense granular matter, geo-materials, electron conducting polymers and nano-composites with novel carbon nanostructures, hybrid piezo/electro-active composites, artificial or naturally occurring super-capacitor materials etc. We expertise on both fundamental and applied condensed matter physics, as well.

LAB INSTRUMENTATION

Instrumentation is combined to perform designed exploration experiments:

Automated pressure system Novocontrol High Pressure Apparatus for Dielectric Spectroscopy (pressure up to 350 MPa, temperature 200 - 500K).

Mini-Bragg Diamond Anvil Cell (Almax).

Closed-circulation Liquid Helium cryostat for combined electro-optical measurements. Solartron Frequency Response Analyzer (1mHz - 10 MHz).

Four channels Keysight Digital Oscilloscope (up to 70 MHz).

Broadband Dielectric Preamplifiers (Aaronia or Novocontrol BDC).

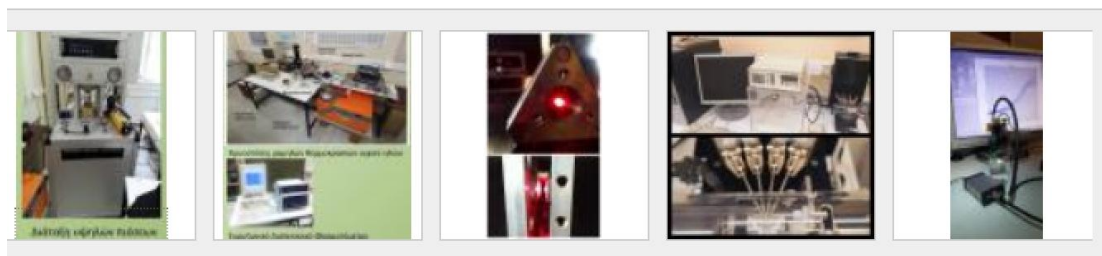
Four or three probe station for conductivity measurements on thin films (Jandel).

Potentiostat (Metrohm) for different modes of time-domain voltammetry (such as cyclic voltammetry, linear or square voltammetry, amperometry etc).

High sensitivity electrometers, power supply etc for any type of electrical measurement.

Different type of sample holders for bulk or surface measurements on solids and liquids (Metrohm printed carbon nanotubes, Novocontrol configuration for thin films, liquids or powders and many self-assembled ones depending on the size of the material investigated).

Sample development and preparation is based on shared facilities (ultrasonic bath, blender, press for pellet formation, XRD, ovens operating in ambient or controlled atmosphere etc).



A virtual tour to the main components of the Dielectric Spectroscopy and High Pressure Physics Lab can be accessed by clicking [here](#).