



**Theoretical and Physical Chemistry Institute
National Hellenic Research Foundation**

Vass. Constantinou 48, Athens

LECTURE

**“1D and 2D Heterostructures: Detailed Structural and Local
Spectroscopic Studies via TEM”**

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Monday, July 8, 2024, 12:00

Seminar room, ground floor, NHRF

1D and 2D Heterostructures: Detailed Structural and Local Spectroscopic Studies via TEM

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In the last two decades, transmission electron microscopes (TEM) have undergone a large number of improvements allowing few meV energy resolutions for a sub-angstrom electron beam. These performances offer new possibilities for probing the optical, dielectric and electronic properties of nanomaterials with unprecedented spatial information, as well as for studying the atomic configuration of nanostructures. I will present a selection of recent works taking advantage of these new capabilities [1-15]. These works will concern the study of the atomic structure & configuration of nanostructures (including doped carbon nanotubes, and other 2D materials (graphene oxide (GO), transition metal dichalcogenides (TMDs)), as well as opto-electronic properties studies carried out via electron energy loss spectroscopy (EELS) measurements of different kind of low-dimensional materials (inorganic nanotubes and metallic nanoparticles). These works will illustrate the study of properties with extreme spatial resolution enabled by a Cs probe corrected STEM combined with the use of a monochromator.

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