Non-carbonaceous Nanostructures and Their Defects

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Due to their unique structural, chemical, mechanical, thermal, optical, optoelectronic, and electronic properties, the interest in the fundamental properties of carbon nanotubes and their exploitation through a wide range of applications continues to increase.

The suitability of nanotubes for future large-scale applications depends on developing successful strategies to control the defects needed for specific applications, while limiting their negative influence on other nanotube properties.

The presence of defects brings benefits, including the introduction of anchor points for chemical functionalization, charge injection, and symmetry-breaking effects, thus faciliting spectroscopic characterization.

Challenging opportunities are being pursued in the detailed characterization of specific defects in nanotubes. The utilization of these specific interactions to better control nanotube properties is expected to have a major impact on the future applications of carbon and *non*-carbonaceous nanotubes.

The defects are important to understand some phenomenon as the coalescence in the carbon nanotubes observed by electron microscopy for first time, as well the synterization process on 3D vanadium oxide NanoUrchin, and the zipping mechanism in non-carbonaceous nanotubes.

The aim of this talk is (i) identified; understand the defects in non-carbonaceous nanostructures based of V_2O_5, SeO_2, and SiP_2O_7 (ii) shows relations among defects and the new born nanometrology field in the hybrid, and non-carbonaceous nanostructures.

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