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Surface chemistry of nanostructured materials – from the synthesis to the application

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Rapid technological evolution in the past years could not have been realized without the development of new functional nanostructured materials. The nanostructures (i.e., quantum dots, nanoparticles, nanowires, nanorods, nanotubes) have gained steadily growing interest in the field of nanotechnology owing to their fascinating and unique properties. The controlled preparation and design of these 0D and 1D nanomaterials opened new frontiers for our technological, industrial and medical evolution. Several advanced technologies are available for the preparation of precisely designed nanomaterials, however, most of these are rather time- and energy-intensive. The development of simple, fast and cheap synthetic methods is essential for facilitating the industrial and medical application of the novel materials.

However, the evaluation of the physicochemical properties of nanomaterials, including size, surface area, solubility, chemical composition, shape, agglomeration state, crystal structure, surface energy, surface charge, surface morphology, and surface coating is also a very important step towards understanding the interaction between nanomaterials and the environment.

In this presentation the formation processes, the physico-chemical properties and the surface chemistry of different nanomaterials will be discussed as well as some possible application will be addressed.

Biography :

Prof. Zoltán Kónya received his Ph.D. in chemistry in 1997 and is very experienced in the synthesis and characterization of low dimensional systems; he worked for years in the laboratories of Prof. János B. Nagy (FUNDP, Namur) and Prof. Gábor Somorjai (Berkeley). He co-authored over 200 peer-reviewed papers and 12 patents, has over 4000 independent citations and his h-index is 36. He is Editor-in-chief of the journal „Nanopages", member of Editorial Board of Catalysis Letters, and chair of the organizing committee of the international SIWAN nanoscience workshop series.He was the scientific leader of several FP6& FP7 European projects.