

Nanoparticles show a great promise in medical applications such as diagnostics and treatment of various diseases. As the biological environment of the living organism is very complex, an extensive research is needed to put the novel alternatives into practise safely. One of the interesting materials for bioapplications is cerium oxide with its unique antioxidant properties. In this work we characterised three systems of bare, histidine-covered and glycine-covered cerium oxide nanoparticles (Ce NPs) in a form of colloid solutions. Colloid stability and reactivity of NPs solutions in various pH were studied using DLS. AFM imaging was utilized to determine the size distribution of NPs clusters and its dependence on the preparation procedure. Synchrotron radiation-based techniques (SRPES, RPES and NEXAFS) as well as laboratory XPS were implemented to investigate electronic structure of the NPs systems with the focus on characterisation of histidine and glycine bonding to Ce NPs surface.