

Coordination polymer nanoparticles for biomedical applications

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The development of nanoparticles as new probes for biomedical imaging is a research highly developed because of strong societal demand in this area. Metal oxides and metallic nanoparticles of various compositions have been intensively investigated and several types of such nanoparticles have been applied in clinical practice. Very recently, nanoparticles of molecule-based materials as a new type of inorganic nanoparticles were explored for such purpose. In this presentation, we present our recent investigations on the synthesis and properties of cyano-bridged coordination polymer nanoparticles $\text{Ln}^{3+}/[\text{Mo}(\text{CN})_8]^{3-}$ (with $\text{Ln} = \text{Eu}, \text{Tb}$) and $\text{Eu}_{0.5}^{3+}\text{Gd}_{0.5}^{3+}/[\text{Mo}(\text{CN})_8]^{3-}$ designed from octacyanomethylates building block and lanthanides ions and enwrapped with the natural water-soluble biopolymer, chitosan (Fig.1). Depending on their composition, these nanoparticles may show high longitudinal/transverse relaxivity and/or luminescence and maybe considered as a new family of multifunctional contrast agents for Magnetic Resonance Imaging and biolabeling. The internalization of these nanoparticles into human cancer cells and their lack of cytotoxicity *in vitro* both on human cancer and normal cell lines were investigated.

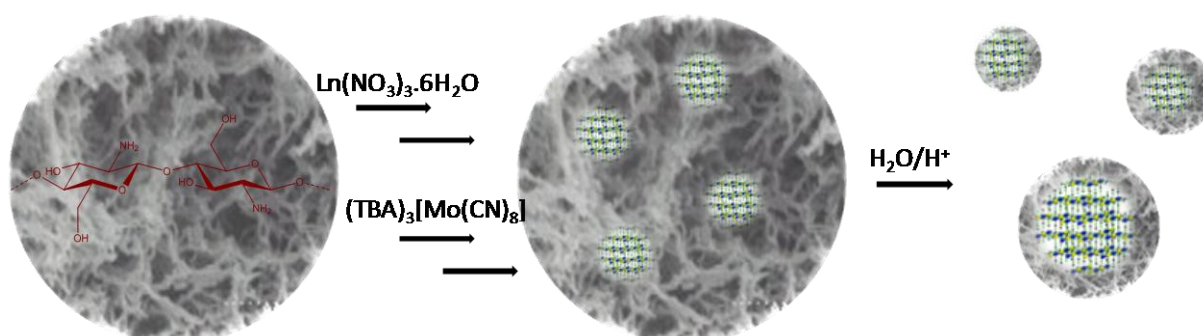


Fig.1. Schematic representation of a step-by-step approach used for the synthesis of coordination polymer nanoparticles enwrapped by chitosan shell.