
Magnetic silica core shell nanoparticles for biomedical applications

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Abstract

Magnetic nanoparticles are widely studied since several decades for biomedical applications. They are still used in clinic as negative contrast agent (T2) in Magnetic Resonance Imaging. Using them as drug carriers could allow guided delivery thanks to magnetic targeting and combined therapy while using magnetic hyperthermia to kill cancerous cells. In diagnostic, they can be used as a diffusing solid phase, confinable while applying a magnetic field gradient. Core shell magnetic nanoparticles are made of few magnetic nanoparticles coated by a non-porous silica shell. The silica shell can be easily doped with fluorescent molecules, useful for the detection in a diagnostic chip or cell imaging. The silica shell surface is a versatile platform for functionalization, with drugs, protein, DNA... depending on the aimed application. In this talk, I will present some results about the synthesis of twice functionalized silica core shell nanoparticles and their use in different context, for diagnostic or therapy.

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