Multifunctional Composite Silica Nanotubes for Targeted Delivery

Objective

Multifunctional nanoparticles hold great promise in targeted therapy as well as other biotechnological fields such as biomolecule sensing and cell separation. The potential of these particles to controllably deliver and accumulate therapeutic and diagnostic agents to target sites in the body make them especially useful platforms for the research in various disease types. Ideal particles for these applications should be easy to synthesize, have minimal size variation and hold efficient functionalities. Combining all these properties in the nanoscale level, however, is a formidable challenge. This project proposes a new class of non-spherical nanoparticles called Multifunctional Composite Silica Nanotubes (MuCoSiNT) for targeted therapeutic delivery applications. MuCoSiNTs will be fabricated by a facile synthesis method that allows absolute control over particle dimensions and functionalities. Moreover, they comprise large inner voids that will be filled with a composite gel matrix for the targeted delivery of imaging and therapeutic agents at high payload capacities. The
in vitro cytotoxicities and antitumor activities of these particles will be determined by examining their effect on cellular viabilities and growth inhibition profiles. Finally, MuCoSiNT internalization into the cells and consequent morphological changes will be confirmed using microscopic techniques.

Fields of science

medical and health sciences > basic medicine
engineering and technology > materials engineering > composites

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-2009-RG - Marie Curie Action: "Reintegration Grants"

Call for proposal

FP7-PEOPLE-2009-RG
See other projects for this call

Funding Scheme

MC-IRG - International Re-integration Grants (IRG)

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