

Anisotropically Luminescent Hydrogels Containing Magnetically-aligned MWCNTs-Eu(III) Hybrids

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In this work, we report the first example of an anisotropic fluorescent, thermoresponsive, hydrogel materials containing lanthanides-CNT hybrids, in which water-soluble polycationic polyvinylpyridinium-coated MWCNTs (PVPy@MWCNTs) scaffolds are exohedrally decorated with an anionic Eu(III)-based complex through ion-pairing interactions. Specifically, we demonstrate that a control of the alignment of the carbon nanotube frameworks induced via a magnetic field, anisotropically affects the emission properties of the m-PVPy@MWCNTs-Eu(III)-based PNIPAAm hydrogels as compared to the non-magnetically treated materials. Exploiting the thermo-responsive optical properties of the hydrogel matrix, stimuli-induced switching of the luminescence output could also be reversibly achieved without affecting the alignment of the CNTs scaffolds.

Reference list:

Chem. Soc. Rev., **2006**, 35, 471-487; *Chem. Soc. Rev.*, **2009**, 38, 2214-2230; *Chem. Soc. Rev.* **2012**, 41, 211-241; submitted papers & unpublished results.

