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Reduction-controlled substrate release from a polymer nanosphere based on a viologen-cavitand

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Abstract

© 2016 The Royal Society of Chemistry. In this article, we present a new polymeric nanosphere (p(MVCA-co-SS)) for redox-controlled substrate release. The nanosphere consists of a hydrophobic core with disulfide bridges stabilized by the viologen-resorcinarene cavitand shell. The nanosphere is sensitive to thiol-containing reducing agents: glutathione (GSH) and dithiothreitol (DTT). GSH destructs the hydrophobic core of p(MVCA-co-SS) while DTT integrates into the core increasing its size. The nanosphere as shown can be used as nanocarriers for the redox-controlled substrate release for the fluorescent dyes (pyrene, rhodamine b and fluorescein).

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