Recent advances in compartmentalized synthetic architectures as drug carriers, cell mimics and artificial organelles - DTU Orbit (20/10/2018)

Compartmentalization is a key feature of biological cells which conduct their metabolic activity in individual steps isolated in distinct, separated compartments. The creation of architectures containing multiple compartments with a structure that resembles that of a biological cell has generated significant research attention and these assemblies are proposed as candidate materials for a range of biomedical applications. In this Review article, the recent successes of multicompartment architectures as carriers for the delivery of therapeutic cargo or the creation of micro- and nanoreactors that mimic metabolic activities, thus acting as artificial cells or organelles, are discussed. The developed technologies to assemble such complex architectures are outlined, the multicompartment carriers’ properties which contribute to their performance in diverse applications are discussed, and their successful applications are highlighted. Finally, future directions and developments in the field are suggested.

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