

Functionalized nanoparticles for cancer theranostics

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According to the World Health Organization, cancer is the second leading cause of death worldwide[1]. Over the last decade, novel therapeutic approaches sought to offer specially adapted and personalized therapies and alternatives when classic treatments are not enough. Nanomedicine is a sub-field of medicine that focuses on applying nanotechnology and nano-sized tools helping to reduce short and long-term side effects and increase therapeutic efficacy.

Herein we described two complementary nanomaterials, namely porphyrin-based mesoporous organosilica nanoparticles (PMOsPOR-NPs) and porous silicon nanoparticles (pSiNP), which offer benefits over other nanoparticles for a wide range of applications due to their outstanding properties, including large specific surface area[2], tunable pore diameter[2], high loading capacity[3], their biocompatibility and biodegradability[4,5]. Their tailor-made preparation and functionalisation with target molecules to efficiently perform two-photon excitation photodynamic therapy (TPE-PDT)[6] or gene delivery will be presented.

References

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Figures

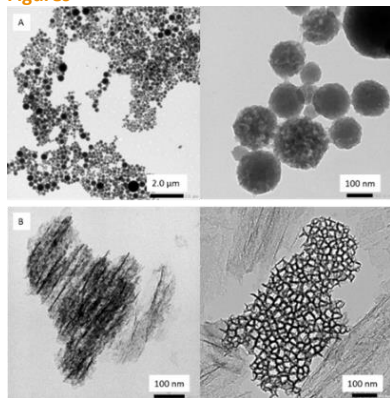


Figure 1: TEM images of the nanomaterials (A) PMOsPOR-NPs at different magnifications (B) Different views of pSiNPs.