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Combined Computed Tomorgraphy and Pgotoacustic Imaging using Dual Modal Targeted Contract Agents

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In order to improve the effectiveness of cancer treatment an accurate detection and localization of the tumor is necessary. By combining the Computed Tomography (CT) and Photoacoustic Imaging (PAT), a non-invasive anatomic diagnostic imaging and an intraoperative optical modality would be valuable to provide fine morphological details for accurate tumor detection and localization. Here, I report the development of new contrast agents as dual-modality molecules with extend properties (specific-targeting and therapy capability) able to combine the strengths of both CT and PAT imaging modality with resulted complementary diagnostic information.

A new generation of compact multifunctional system composed by uniformly fused components, Au core AgI shells (Au-AgI shell NPs) covered by protecting amphylilic PEGylated spacers and CALNN anchored-targeted transferrin moieties has been synthesized. We prove that the present surface preserved core shell nanoprobes not only have a highly specific and sensitive targeting ability but also induce efficient contrast enhancement in CT imaging. Also, based on their high surface density and NIR response they could enable both efficient targeted diagnosis and therapy.

Biography

Anamaria Orza focuses primarily on the area of development of innovative architectural nano camposites for biomedical applications. Prior to her arrival at Emory in the fall of 2013, Dr. Orza served as a postdoctoral researcher at the Center for Integrative Nanotechnology Sciences at the University of Arkansas at Little Rock. Dr.Orza has been recognized as a European Union fellow, receiving her PhD in Chemistry from Babes Bolyai University, Romania and working in close collaboration with Liverpool University, United Kingdom. Dr. Orza has authored and co-authored 2 patents and over 32 papers in leading journals and at leading international conferences in the field (with over 170 citations) and 2 book chapters in the fields of Applied Nanotechnology in Cancer Research and Tissue Engineering.

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