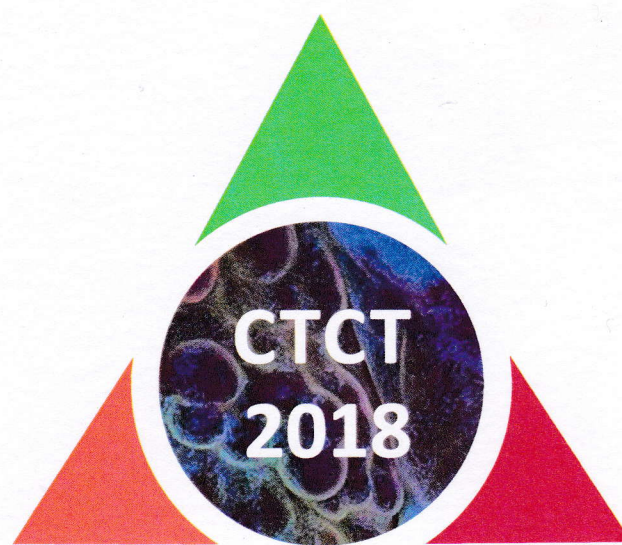


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Current Trends in Cancer Theranostics



IMPACT OF VARIOUS COATINGS ON OPTICAL PROPERTIES AND ACCUMULATION OF UPCONVERTING NANOPARTICLES IN CANCER CELLS

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Comprehensive research around current problems in cancer tumour imaging allowed to emerge for new generation fluorophores, also termed as upconverting nanoparticles (UCNPs), as an alternative for these issues [1]. Hereby, it is crucial to acknowledge to what extent different properties of these nanoparticles can play a role in targeted human breast cancer imaging [2]. There are knowledge gaps on the role of different coatings on nanoparticle colloidal stability as well as their behavior in cancer cells. Thereat, supplementary research on this topic is unavoidable.

The aim of this work was to research optical properties of $\text{LiYF}_4:\text{Yb}^{3+}, \text{Tm}^{3+}$ UCNPs which surface was modified with citrate, SiO_2 and phospholipids, gain colloidal stability data and accumulation observations in human breast cancer cell lines with different tumorigenicity. It is crucial to discover nanoparticles with highest colloidal stability and decent optical properties, which can be applied successfully while carrying future experiments *in vivo*. Data from experimental part suggests to make final conclusion that citrate coated upconverting nanoparticles will be a significant tool for ongoing future applications.

References

1. C. Xu *et al.* Laser Photonics Rev. **5** (2013) 663-697.
2. H. Gorris *et al.* Anal Bioanal Chem. **25** (2017) 5875-5890.