

Abstract Submitted
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Multifunctional nanoparticles ($\text{Au@SiO}_2\text{@Y}_2\text{O}_3\text{:Er}^{3+}$) for biological and photonic application¹ MADHAB POKHREL, JIANHUI YANG, University of Texas at San Antonio, PARESH C. RAY, Jackson State University, DHIRAJ K. SARDAR, University of Texas at San Antonio — Due to plasmon at the surface, the absorption and scattering of electromagnetic radiation by metal nanoparticles are strongly enough. These properties provide the potential of designing multifunctional nanoparticles which are optically active for simultaneous molecular imaging and photothermal cancer therapy. Gold nanorods with suitable aspect ratios can absorb and scatter strongly in the NIR region. In the present work, we have demonstrated the application of multifunctional nanoparticles ($\text{Au@SiO}_2\text{@Y}_2\text{O}_3\text{:Er}^{3+}$) as contrast agents for both molecular imaging and photo thermal therapy. These multifunctional nanoparticles has shown the enhancement in Er^{3+} fluorescence through plasmon interaction and enhancement in Raman spectrum, which made these nanoparticles potential for biosensor for detecting the biological and chemical molecule.

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