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Synthesis of NaYF₄: Yb, Er upconversion nanoparticles and their application to in vivo imaging in bacteria as a first step for a future biomarker

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Synthesis of NaYF₄: Yb, Er upconversion nanoparticles and their application to in vivo imaging in bacteria as a first step for a future biomarker

Upconversion nanoparticles (UCNP) NaYF₄: Yb, Er can emit bright green fluorescence under near-infrared light (NIR) excitation. The application of UCNP as imaging biomarkers has recently received a great deal of attention in recent years. In this work, NaYF₄ nanoparticles doped with Yb⁺³ and Er⁺³ ions have been synthesized at the National University of Engineering (UNI) in the Physics and Condensed Matter Laboratory (LFMC) using the solvothermal method. The prepared UCNPs were introduced into bacteria, already having them in a culture for their subsequent digestion, characteristics to achieve successful in vivo images. Our work demonstrates the potential application of UCNPs in the study of the biological behavior of organisms and lays the foundation for the further development of UCNPs in disease detection and diagnosis. This may be the first step to start the applications of Biomarkers in Peru.

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