Title: Luminescent Lanthanide Complexes for Plasmonics and Metamaterials Studies

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Plasmonic's and metamaterials applications are essential in innovation of new products for the future, and is a phenomenon in the optical and scientific industries. Lanthanide elements are the interest for metamaterials research due to luminescent photonic interactions, and the possibility of electrical conductivity when placed in a plasmonic environment. Organic rare earth ions $X(NO)_3 \bullet (Byp)_2$ are the interest of studies, and 2,2 bipyridine is the ligand attached to rare earth ion to excite in UV spectrum. Rare earth ions used in research experiments were Eu, Er, Yb, Gd, Tm, Ln and a hybridized form of crystals with two rare earth ions were fabricated $X_{0.5}X_{0.5} \bullet (Byp)_2$ which display a Foster Energy transfer between two rare earth ions when excited. Organic lanthanide crystal Er^{3+} emits efficient infrared photoluminescence from 4f-4f energy transition, erbium can be excited at a wavelength of 378 nm and emits in IR at an observed wavelength of 1567 nm. Lanthanide crystals exhibit magnetic dipole transitions, are highly luminescent, nanoparticles when excited by photons in ultra violet, visible, and Infa-Red spectrum. Nano-particles can be applied to a plasmonic environment, and when excited by photons electrical current can be induced due to the magnetic and dipole interactions in lanthanide elements.

Biography

Alexis is a remarkable research student whom has achieved many goals, and she is dedicated to her research projects she has been conducting at CMR. has worked in the library as an undergraduate student where she would route printers to their destinations, trouble shoot computers, helped students who were blind or with disabilities complete assignments. Alexis has assisted in various programs outside of working for the library that has given her more opportunities to excel into an excellent graduate student. She is very persistent person whose personality is very delightful and, she is an inspiration to other students whom observed her work ethic in the library. Alexis has worked so very hard on her project and paper the research that she was conducting was published "Organic Lanthanides for Nano-Optics Studies" which has received lots of recommendations in the scientific field.

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