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Enhancement of UV upconversion emission under near infrared excitation from NaYF4 nanocrystals doped with different lanthanide dopants CAROLINA VALDES, MADHAB POKHREL, YUANBING MAO, None — Lanthanide doped nanocrystals have been attracted intensive attentions recently due to their interesting photoluminescence properties. Each lanthanide exhibits its own unique optical property, allowing for emission of light at different wavelengths. Consequently, different dopants can be used at varying concentrations to fine-tune desired emission wavelengths. The hexagonal crystal structure with low phonon energy and high photon efficiency has made $NaYF_4$ a very efficient host for lanthanide dopants. Excitation of this material occurs at low energy in the near infrared (NIR) region and through energy transfer between dopants, emission at higher energy in visible regions is observed. A lot of work has been reported on upconversion to visible light; however, there is limited work on UV upconversion and enhancement of emission. Our current work focused on synthesizing a pure crystalline phase of $NaYF_4$ and doping these nanocrystals with different lanthanides, including Tm, Nd and Gd using various concentrations. These nanocrystals have been systematically characterized by X-ray diffraction (XRD), scanning electron microscope (SEM), and photoluminescence (PL).

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