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Systematic Study of Up-Conversion Luminescence in NaYF4:Yb3+,R3+

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In up-conversion luminescence, the absorption of two or more low energy photons is followed by the emission of a high energy photon. NaYF4:Yb3+,R3+ (R: Pr, Nd, Sm, Eu, Tb, Dy, Ho, Er or Tm) materials were prepared to study up-conversion luminescence. The materials were studied with TG-DSC, FTIR and XPD methods. Up-conversion luminescence was studied with NIR laser excitation at 976 nm. The DSC curves showed an exothermic signal at 400-500 oC due to the cubic-to-hexagonal phase transition of NaRF4. The TG curves showed only small mass losses (ca. 2-4 %) during heating to 500 ℃. The FTIR spectra did not reveal other impurities apart from water absorbed in the KBr discs. The XPD patterns confirmed the hexagonal structure of the annealed materials. The up-conversion luminescence was observed of Pr3+, Nd3+, Eu3+, Tb3+, Ho3+, Er3+ and Tm3+. The up-conversion luminescence was not obtained of Sm3+ and Dy3+.

Are you currently a postgraduate student? (Yes/No)

yes

At what level of studies are you currently? (Hons/MSc/PhD)

MSc

Please provide the name and email address of your supervisor.

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