

# Upconversion luminescence of $\text{Ca}_{1-x}\text{Ho}_x\text{F}_{2+x}$ and $\text{Sr}_{0.98-x}\text{Er}_{0.02}\text{Ho}_x\text{F}_{2.02+x}$ powders upon excitation by an infrared laser

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## Abstract

© 2017 Astro Ltd. Fluorite-type  $\text{Ca}_{1-x}\text{Ho}_x\text{F}_{2+x}$  and  $\text{Sr}_{0.98-x}\text{Er}_{0.02}\text{Ho}_x\text{F}_{2.02+x}$  powders were synthesized using the co-precipitation from water solution technique. The upconversion luminescence of  $\text{Ca}_{1-x}\text{Ho}_x\text{F}_{2+x}$  and  $\text{Sr}_{0.98-x}\text{Er}_{0.02}\text{Ho}_x\text{F}_{2.02+x}$  powders in the visible spectral region upon excitation of 5 I 7 level  $\text{Ho}^{3+}$  ions and 4 I 13/2 level  $\text{Er}^{3+}$  ions were studied for the first time. The possibility of visualizing near IR laser radiation using  $\text{Ca}_{1-x}\text{Ho}_x\text{F}_{2+x}$  and  $\text{Sr}_{0.98-x}\text{Er}_{0.02}\text{Ho}_x\text{F}_{2.02+x}$  powders is proposed. Optimal compositions of  $\text{Ca}_{1-x}\text{Ho}_x\text{F}_{2+x}$  and  $\text{Sr}_{0.98-x}\text{Er}_{0.02}\text{Ho}_x\text{F}_{2.02+x}$  powders for application as visualizers are discussed.

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## Keywords

Er ion  $3+$ , fluoride powder, Ho ion  $3+$ , near infrared laser, upconversion luminescence, visualizer

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