

## EFFECTS OF HYDROSTATIC PRESSURE ON THE UPCONVERSION EMISSION IN $\text{Er}^{3+}/\text{Yb}^{3+}$ CODOPED $\text{LuVO}_4$ CRYSTALS

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$\text{Yb}^{3+}$  sensitized up-conversion has been studied in  $\text{Er}^{3+}$  doped  $\text{LuVO}_4$  crystals upon excitation at 980 nm and under hydrostatic pressure. The study of high pressure luminescence offers a unique opportunity to investigate the energy transfer processes through a non-destructive modification of the crystal structure that affects the electronic transitions responsible for the transfer processes involving the 4f-shell energy levels of  $\text{RE}^{3+}$  ions.

We report the first measurements on upconversion luminescence spectra of  $\text{Er}^{3+}/\text{Yb}^{3+}$  doped  $\text{LuVO}_4$  under high pressure. In addition to the previously observed strong up-converted  $\text{Er}^{3+}$  emission bands at 528, 548 and 558 nm, two weak bands are observed around 506 nm at room temperature and ambient pressure. Moreover, a further up-converted emission band at 410 nm is observed at a pressure of 5.3 GPa. Most spectral positions and linewidths do not change significantly between ambient pressure and 6.3 GPa. The observation of the emission line at 410 nm directly indicates that n-photon summation and APTE processes are operative.