

Abstract Submitted
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Unusually strong Stark effect in electronic ferroelectric $\text{Er}_{1-x}\text{Yb}_x\text{Fe}_2\text{O}_4$ JIMIN ZHAO, Institute of Physics, Chinese Academy of Sciences, RUI WANG, HUANXIN YANG, JIANQI LI — Strong Stark splitting, which is nearly independent of the R-ions replacement, has been observed through the photoluminescence investigation of electronic ferroelectric $\text{Er}_{1-x}\text{Yb}_x\text{Fe}_2\text{O}_4$ ($x=0, 0.8, 0.9,$ and 0.95). Initially multiple radiative decay channels have been investigated, especially the visible transition ${}^4F_{9/2} \rightarrow {}^4I_{15/2}$, of which a quenching effect has been observed. A series of small non-Raman peaks have been observed superimposed on a broadband photoluminescence spectrum, of which we tentatively assign Stark splitting to be the cause. The splitting of the ${}^4F_{9/2}$ and ${}^4I_{15/2}$ levels is found to be 54 meV and 66 meV, respectively. This unusually large Stark splitting at visible range indicates the existence of strong local field originated from the W-layer in the charge-frustrated ErFe_2O_4 .

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