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The Influence of Impurity Doping On the Phase Transition and Morphology Tuning of Sr/CaFCl: Yb3+,Er3+ Nanoparticles YUE CUI, Wake Forest Univ, SULING ZHAO, Beijing Jiaotong University, WENXIAO HUANG, Wake Forest Univ, ZHENG XU, Beijing Jiaotong University, YUAN LI, DAVID CARROLL, Wake Forest Univ, SULING ZHAO TEAM — Upconversion nanoparticles (UCNPs) are well-known for their unique luminescent properties that enable the conversion of low-energy photons into high-energy photons by multiphoton processes. In this work, Sr/CaFCl: Yb3+,Er3+ NCs with a wide range of ions dopant concentrations were synthesized, and strong green and red upconversion fluorescence were observed under laser excitation at a wavelength of 980 nm. The influence and mechanism of ions dopant are demonstrated and discussed. The ions doped concentration has a significant influence on the phase-transfer of the host material and on the corresponding upconversion emissions, and the mechanism of which was studied. In addition, the optimized concentration represents a good balance between the occurrence of the phase transition and concentration quenching. These high-efficiency nanoparticles have potential applications in the fields of optical nanodevices and biomedicine.

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