Electronic Supplementary Material (ESI) for CrystEngComm.

Supplementary information

Effects of crystalline growth on structural and luminescence properties of $Ca_{(10-3x)}Eu_{2x}(PO_4)_6F_2$ nanoparticles fabricated by using microwave driven hydrothermal process

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Structural characterization

XRPD patterns were recorded on a X'Pert Pro PANalytical (Almelo, Netherlands) diffractometer, with θ-θ geometry, equipped with a solid detector X-Celerator, and using CuKα radiation (λ = 1.54184 Å). The XRPD patterns were recorded at room temperature in the interval 3° < 2θ < 120° with a step size of Δ2θ = 0.0167° and a counting time of 200 s for each data value. A total counting time (about 200 min) was used for each sample. The XRPD pattern for a pure LaB_6 NIST standard (SRM 660b) was collected by using the same experimental conditions in order to extract the instrumental resolution function to improve the peak profile fitting and to extract intrinsic microstructural parameters. The presented results of Rietveld refinement were calculated by using the FullProf.2k program.

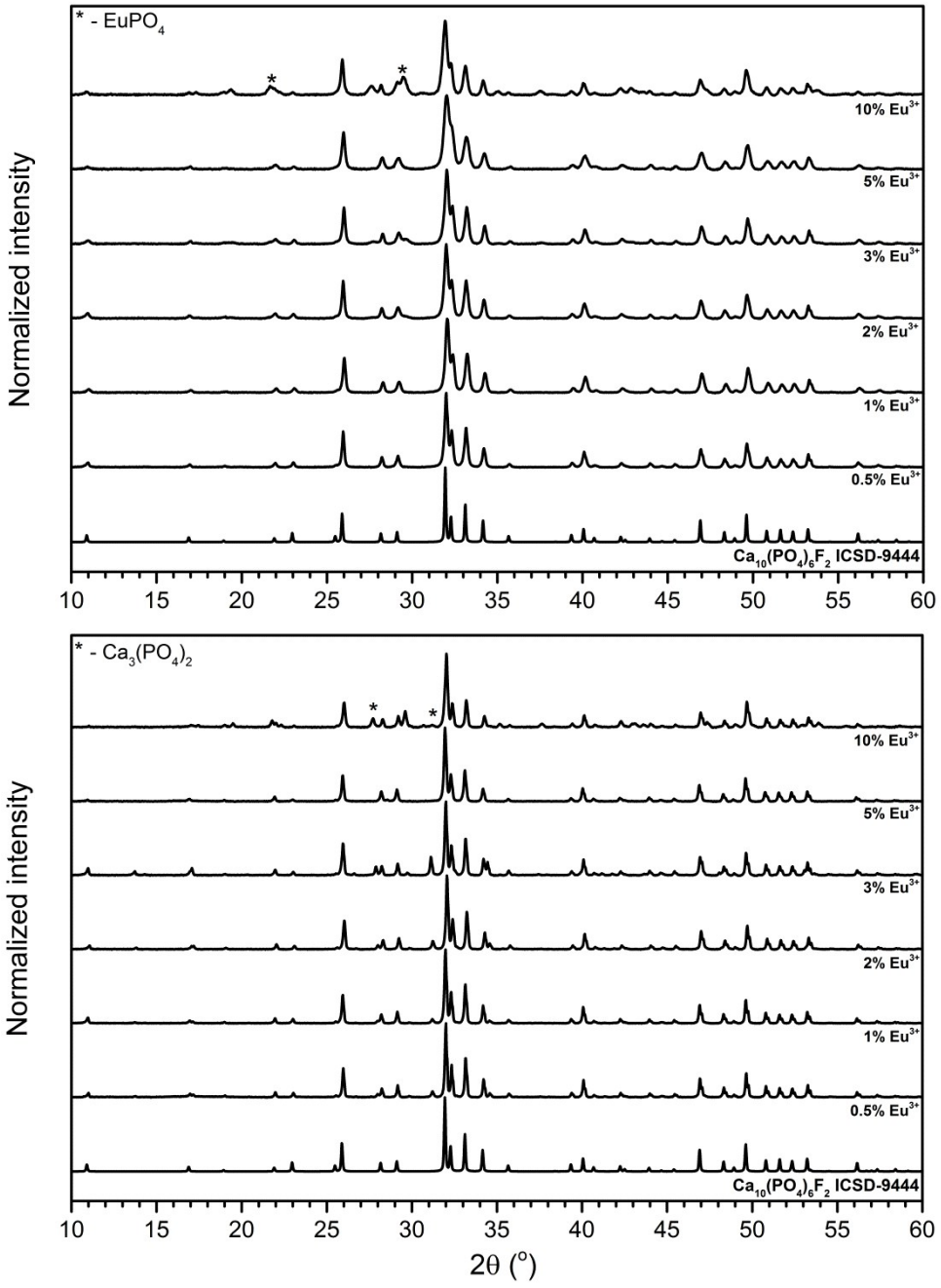

Figure s1. X-ray powder diffraction patterns of the $Ca_{(10-3x)}Eu_{2x}(PO_4)_6F_2$ annealed at 800°C/3h (upper) and 1000°C/3h (bottom) depending on optical ions concentration.

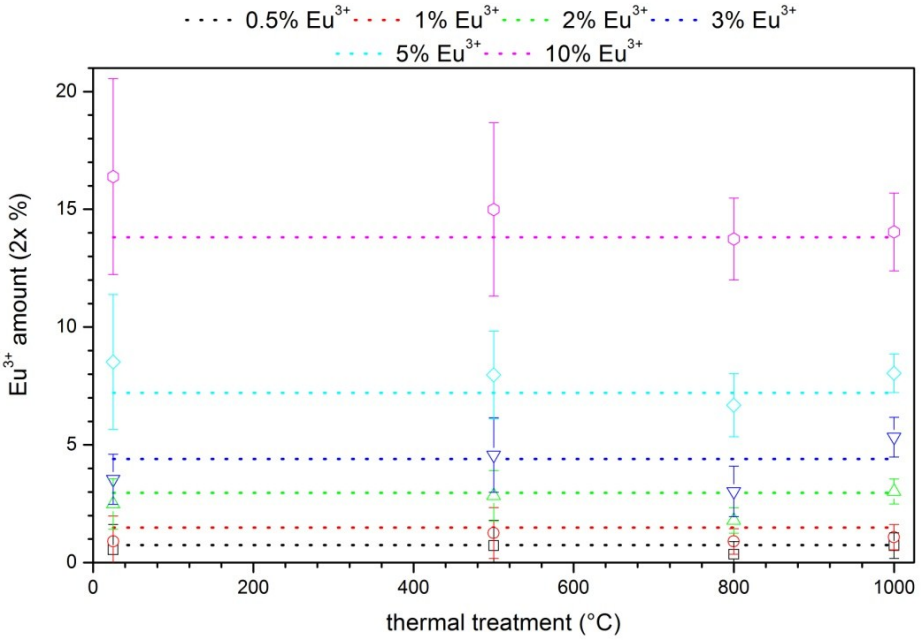

Figure s2. The amount of Eu^{3+} ions in fluorapatite structure depending on thermal treatment calculated by Rietveld refinement.

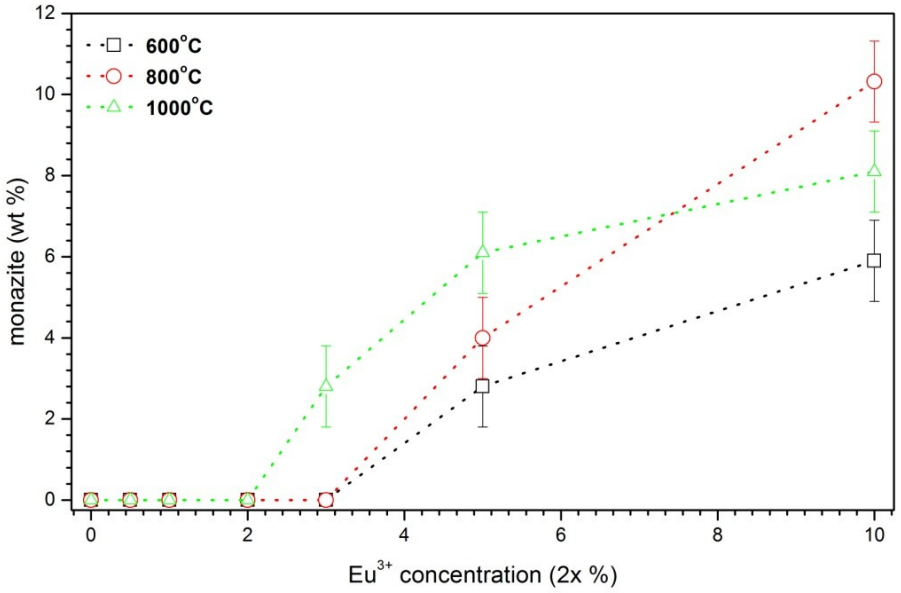

Figure s3. The monazite content in the fluorapatite structure depending on Eu^{3+} ions concentration in various temperatures of thermal treatment calculated by Rietveld refinement.

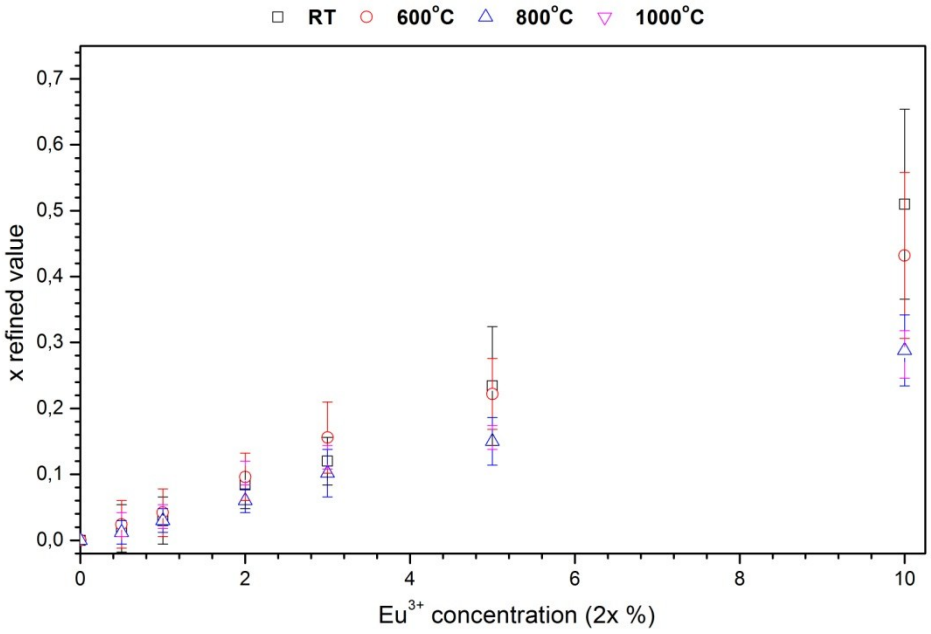

Figure s4. The Eu^{3+} ions content in fluorapatite structure according on the concentration of Eu^{3+} ions calculated by Rietveld refinement.

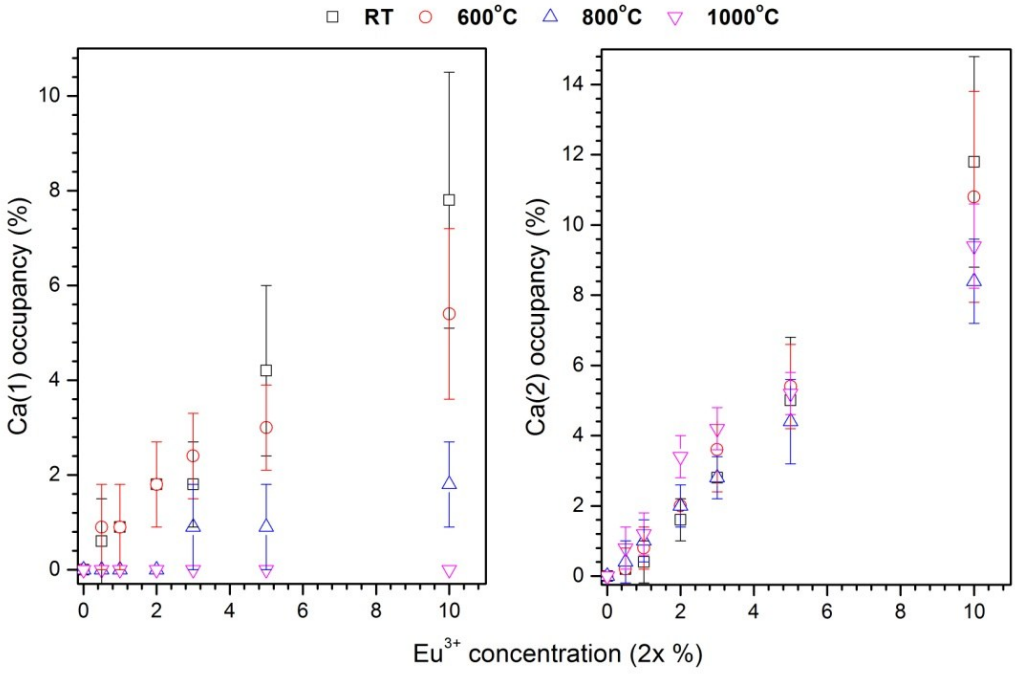

Figure s5. The Eu^{3+} ions occupancy in fluorapatite structure calculated by Rietveld refinement.