Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Electronic Supporting Information

Eu^{3+} Activated Sr_3ZnTaO_9 Single-Component White Light Phosphor: Emission Intensity Enhancement and Color Rendering Improvement

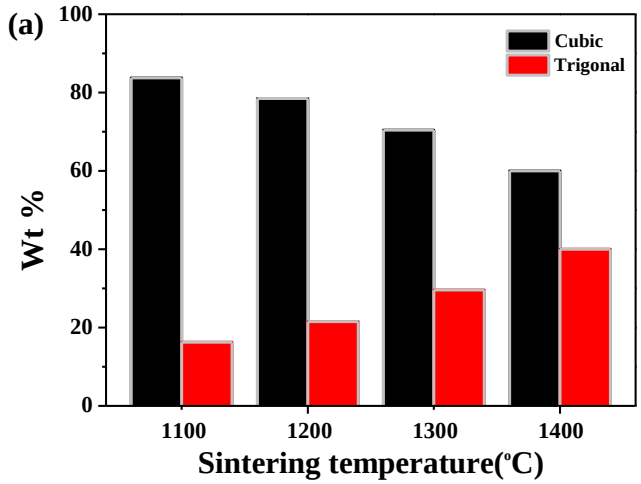
Xiaohui Li,[a] Bojana Milićević,[a] Miroslav D. Dramićanin,*[b] Xiping Jing,[c] Tang Qiang,[d] Jianxin Shi,[a] and Mingmei Wu*[a]

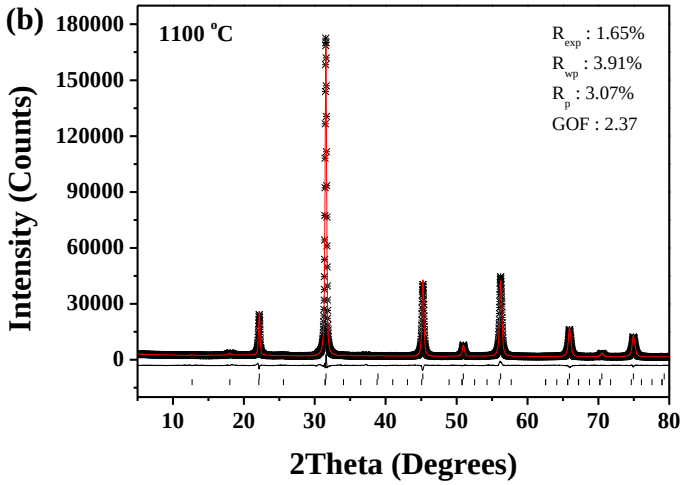
[a] MOE Key Laboratory of Bioinorganic and Synthetic Chemistry, School of Chemistry, Sun Yat-Sen University, Guangzhou 510275, People's Republic of China.

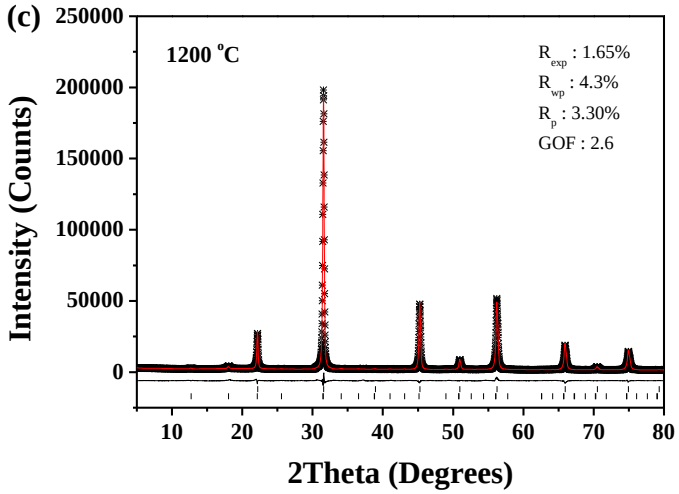
[b] University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, Belgrade 11001, Serbia.

[c] Beijing National Laboratory for Molecular Sciences, the State Key Laboratory of Rare Earth Materials Chemistry and Applications, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, People's Republic of China.

[d] State Key Laboratory of Optoelectronic Materials and Technologies, School of Physics, Sun Yat-Sen University, Guangzhou 510275, People's Republic of China.


(a)
Cubic
Trigonal
Wt %
Sintering temperature(°C)


(b)
1100 °C
R_exp : 1.65%
R_wp : 3.91%
R_p : 3.07%
GOF : 2.37
Intensity (Counts)
2Theta (Degrees)


(c)
1200 °C
R_exp : 1.65%
R_wp : 4.3%
R_p : 3.30%
GOF : 2.6
Intensity (Counts)
2Theta (Degrees)

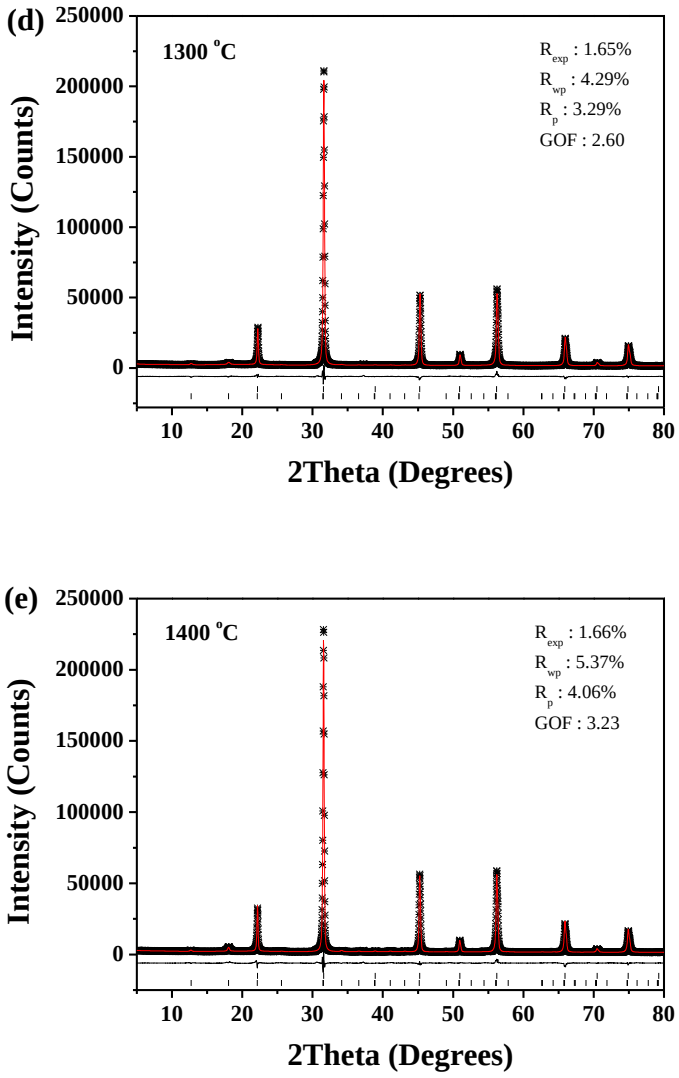


Figure S1. (a) Results of quantitative refinements of SZT obtained at 1100 – 1400 °C temperature range. Corresponding refinement plots at: (b) 1100 °C, (c) 1200 °C, (c) 1300 °C and (d) 1400 °C, respectively.

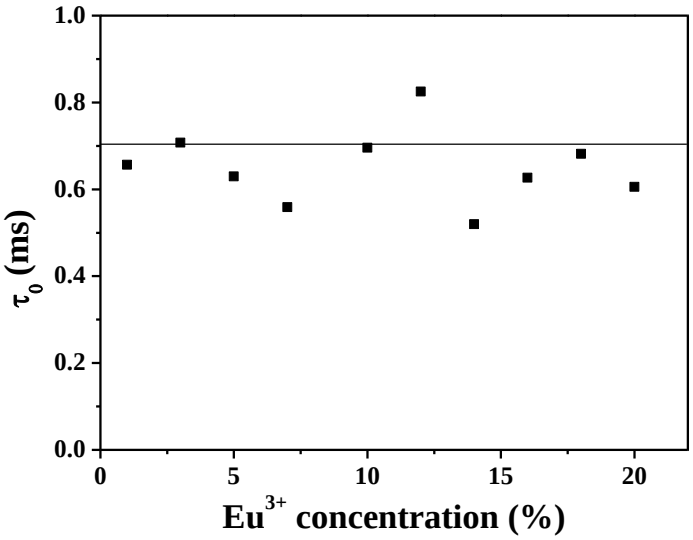
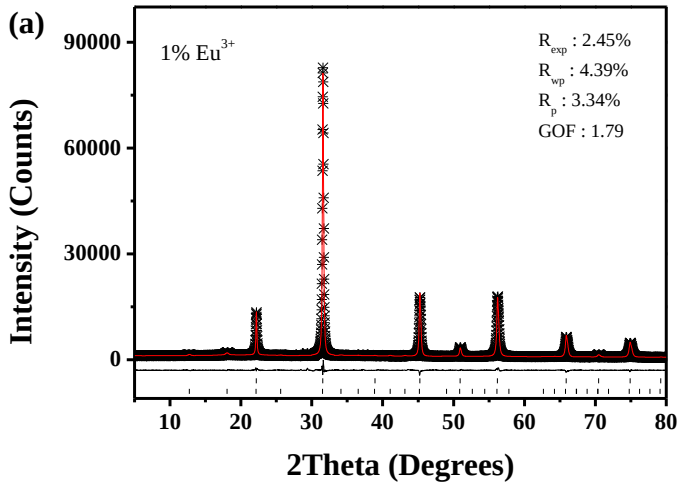
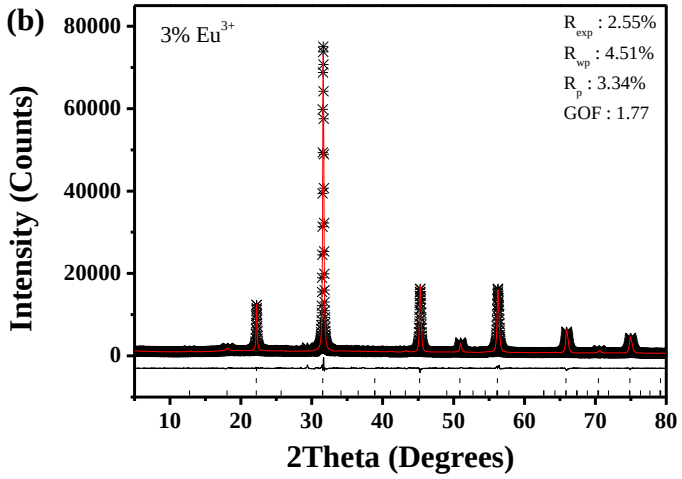
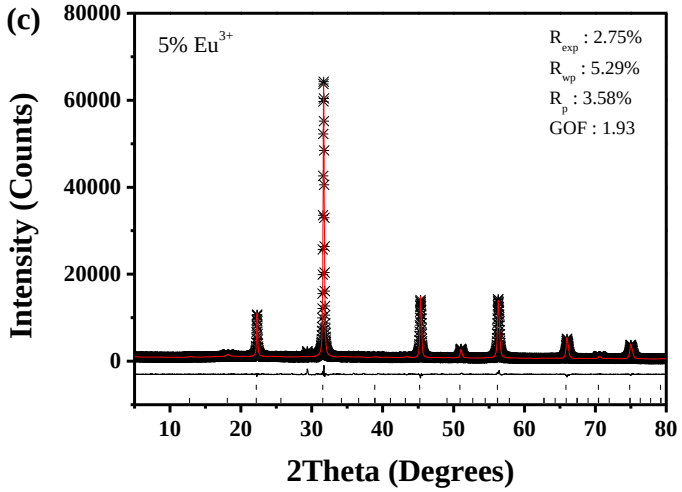


Figure S2. Lifetimes of $^5D_0 \rightarrow {}^7F_2$ emission under 464 nm excitation of SZT: xEu^{3+} (1% ≤ x ≤ 20%).


(a)
1% Eu3+
Rexp : 2.45%
Rwp : 4.39%
Rp : 3.34%
GOF : 1.79
Intensity (Counts)
2Theta (Degrees)


(b)
3% Eu3+
Rexp : 2.55%
Rwp : 4.51%
Rp : 3.34%
GOF : 1.77
Intensity (Counts)
2Theta (Degrees)


(c)
5% Eu3+
Rexp : 2.75%
Rwp : 5.29%
Rp : 3.58%
GOF : 1.93
Intensity (Counts)
2Theta (Degrees)

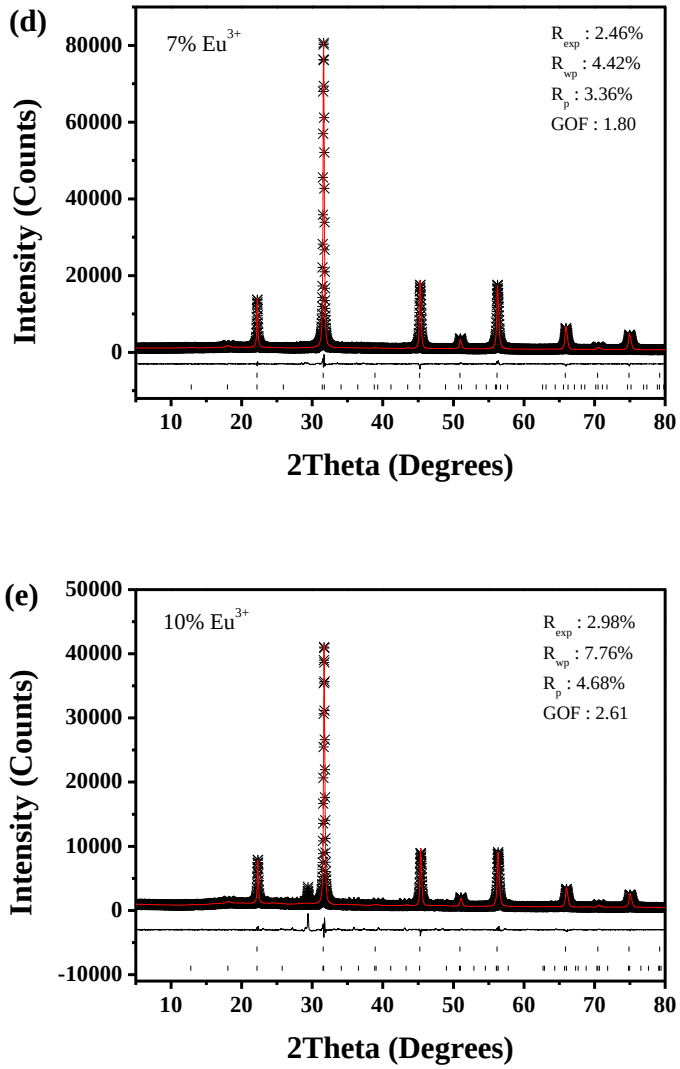


Figure S3. Quantitative Rietveld refinements of SZT: xEu^{3+} (a) x = 1%, (b) x = 3%, (c) x = 5%, (d) x = 7% and (e) x = 10%.