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

CaF_2: Eu Films Shine Novel Blue, White or Red luminescence though Adjustment of Valence state of Eu Ions using Electro-deposition Method

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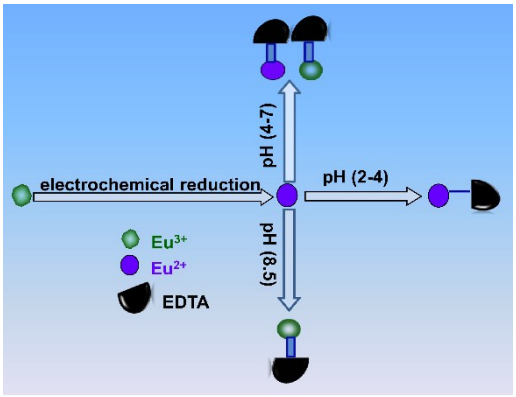

Scheme S1. Schematic illustration for the formation of Eu^{2+}/Eu^{3+} ions in preparation of CaF_2: Eu film.

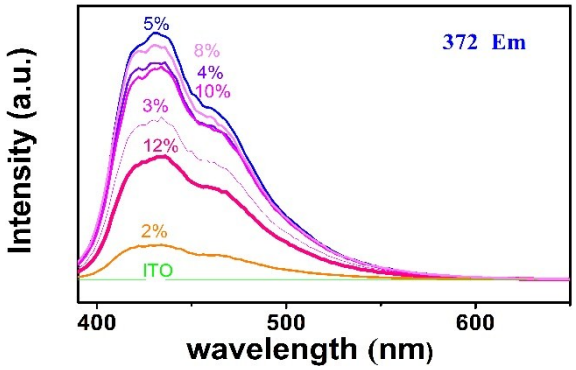

Figure S1. Emission spectra from the CaF2: Eu thin films.

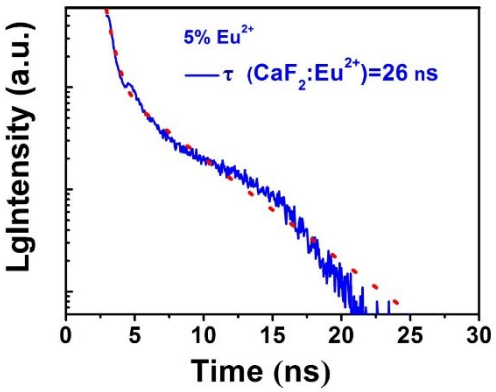

Figure S2 Time evolution of blue (425 nm) (under pulsed 372 nm excitation from 372 nanosecond laser) from a thin film of the CaF_2: 5% Eu, prepared at pH=3.5.

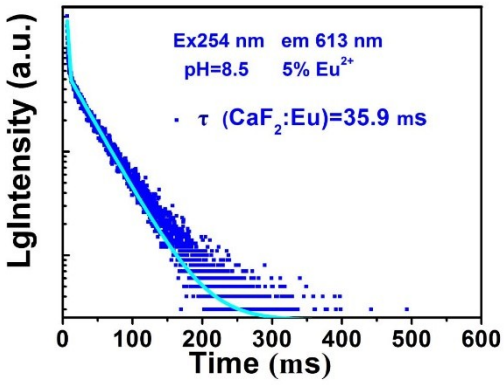

Figure S3. Time evolution of the red (613nm) emission under pulsed 254 nm excitation, from a thin film of the CaF_2: 5% Eu, prepared at pH=8.5

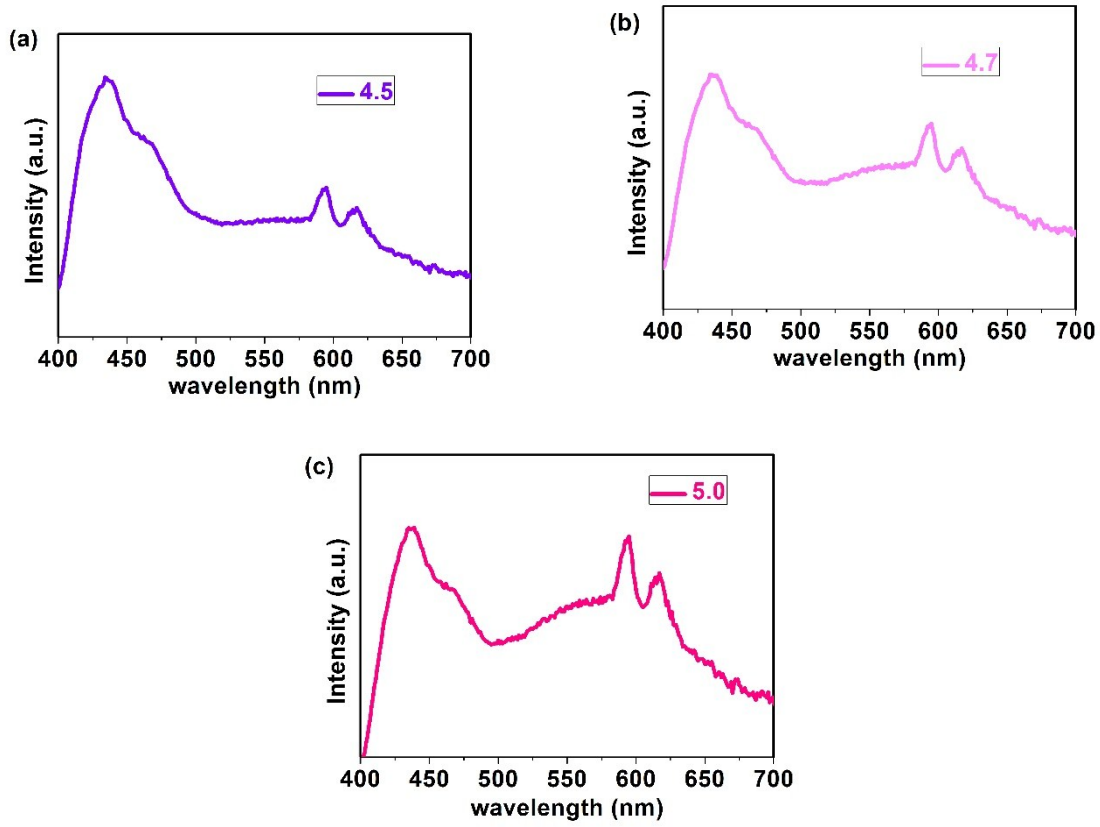

Figure S4. Emission spectra of the CaF_2: Eu films prepared at (a) pH=4.5, (b) pH=4.7, (c) pH=5.0.