

Supplementary Material for PCCP
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**Ionic liquid as plasticizer for europium(III)-doped luminescent
poly(methyl methacrylate) films**

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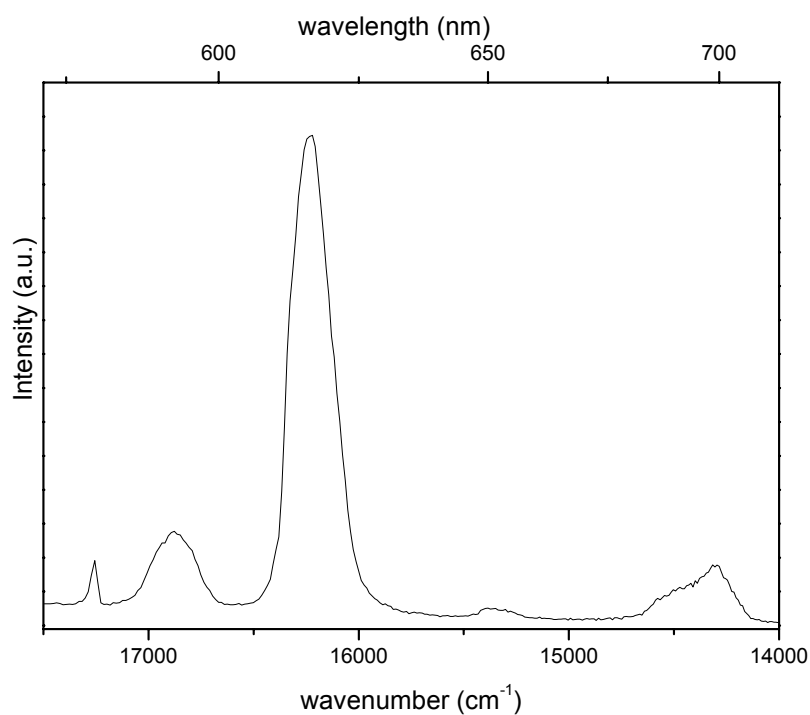


Figure S1. Luminescence spectrum of a $[\text{C}_6\text{mim}][\text{Eu}(\text{nta})_4]$ -doped PMMA/ $[\text{C}_6\text{mim}][\text{Tf}_2\text{N}]$ film, which was prepared at 60°C. The emission spectrum was recorded at room temperature and the excitation wavelength was set at 270 nm.

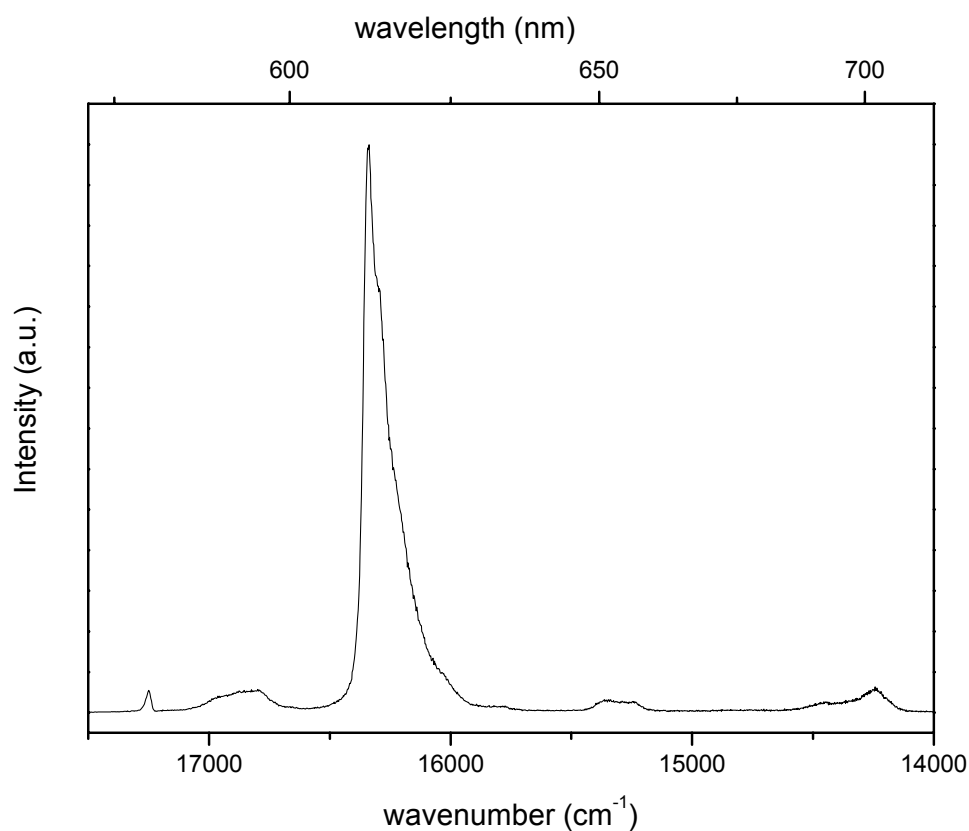


Figure S2. Luminescence spectrum of a [C₆mim][Eu(nta)₄]-doped PMMA/[C₆mim][Tf₂N] film, which was prepared at room temperature. The emission spectrum was recorded at room temperature and the excitation wavelength was set at 340 nm. Compare this spectrum with that shown in Figure S1.

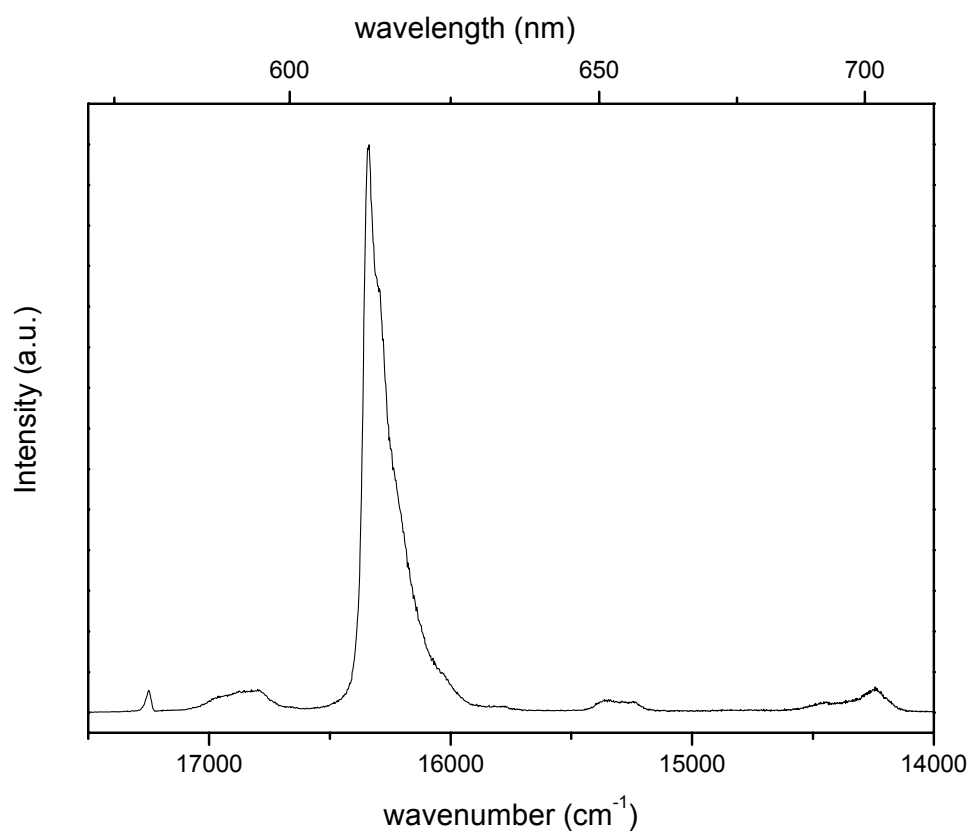


Figure S3. Luminescence spectrum of a [C₆mim][Eu(tta)₄]-doped PMMA/[C₆mim][Tf₂N] film. The emission spectrum was recorded at room temperature and the excitation wavelength was set at 340 nm.

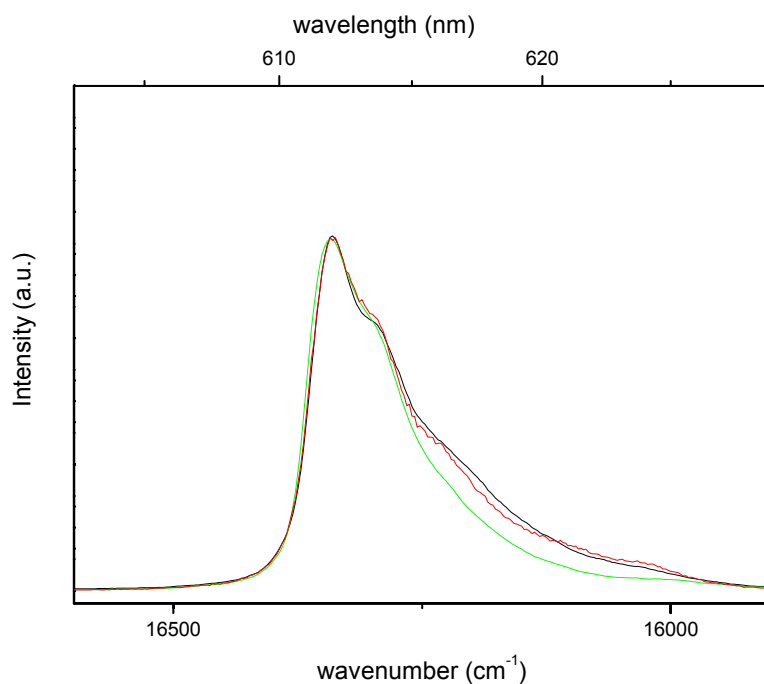


Figure S4. Comparison of the hypersensitive transition ${}^5D_0 \rightarrow {}^7F_2$ in the luminescence spectra of $[C_6mim][Eu(NTf_2)_4]$ in the composite PMMA/ionic liquid film (black line), dissolved in the ionic liquid (green line) and in THF (red line) (excitation wavelength is 340 nm).

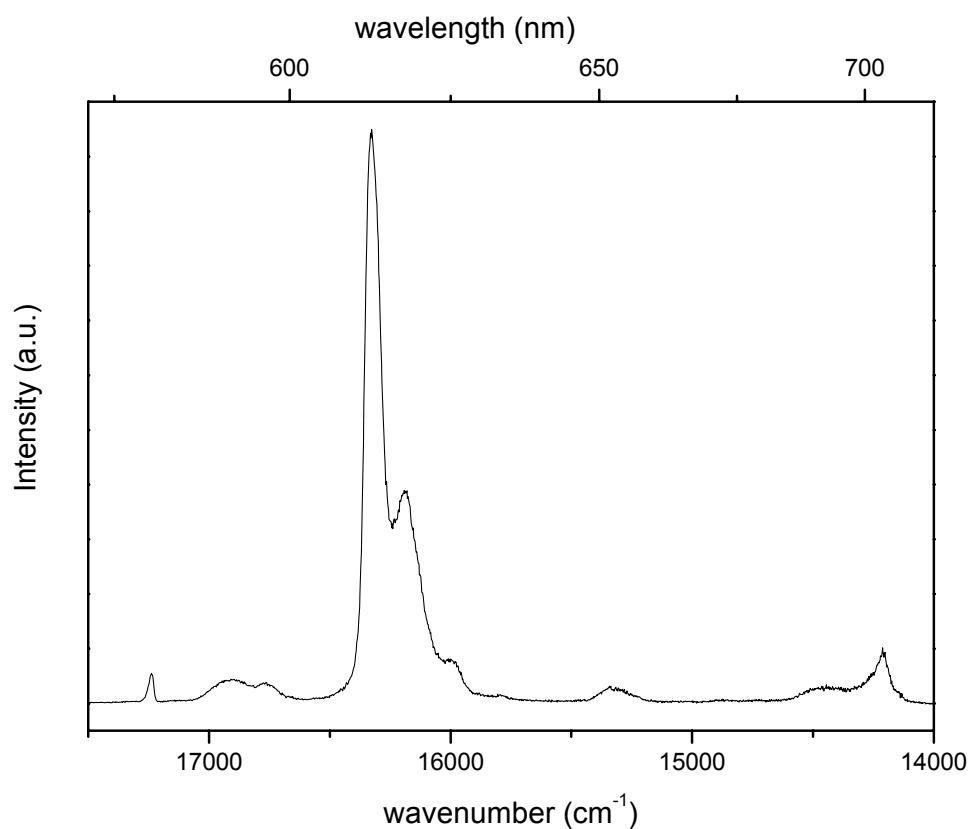


Figure S5. Luminescence spectrum of a [Eu(tta)₃(phen)]-doped PMMA/[C₆mim][Tf₂N] film. The emission spectrum was recorded at room temperature and the excitation wavelength was set at 340 nm.

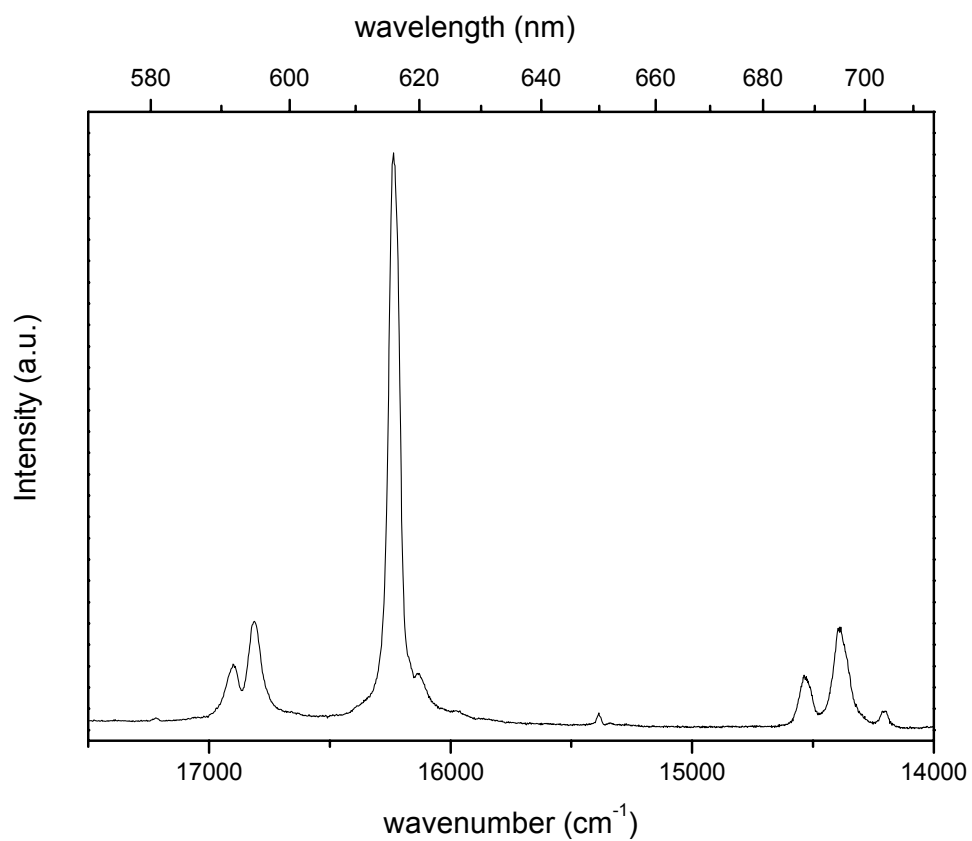


Figure S6. Luminescence spectrum of [choline]₃[Eu(dpa)₃]-doped PMMA/[C₆mim][Tf₂N] film. The emission is recorded at room temperature. The excitation wavelength was set at 280 nm.

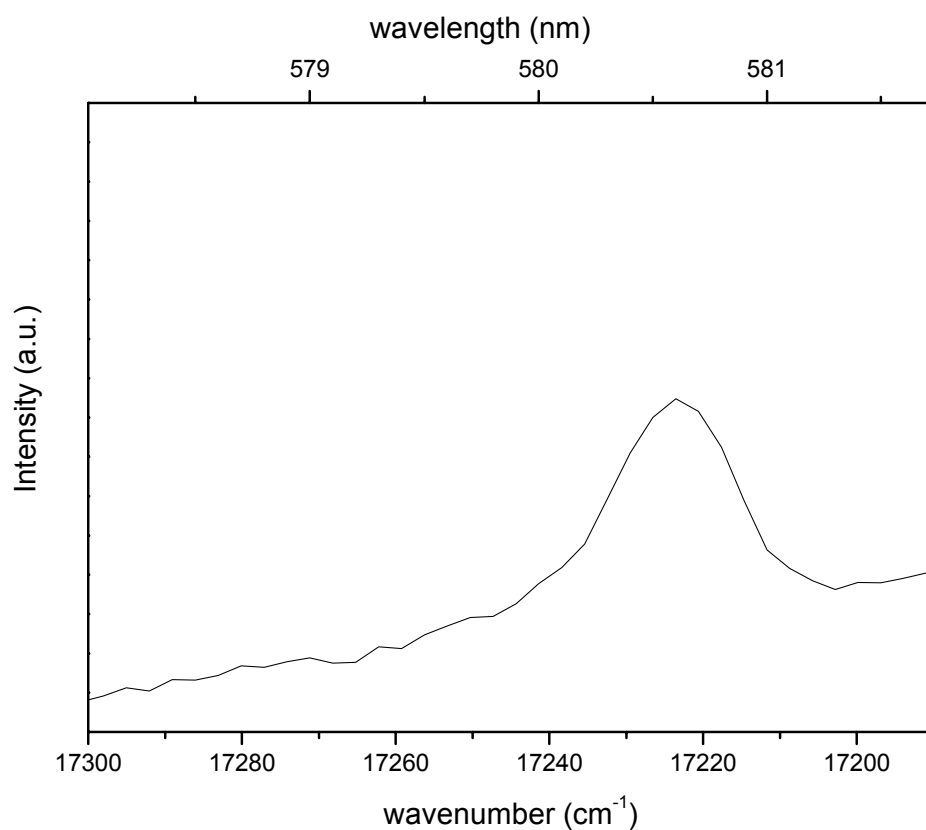


Figure S7. The $^5D_0 \rightarrow ^7F_0$ line in the luminescence spectrum of [choline]₃[Eu(dpa)₃]-doped PMMA/[C₆mim][Tf₂N] film. The symmetrical band shape is clearly visible. The excitation wavelength was 280 nm and the spectrum was recorded at room temperature.

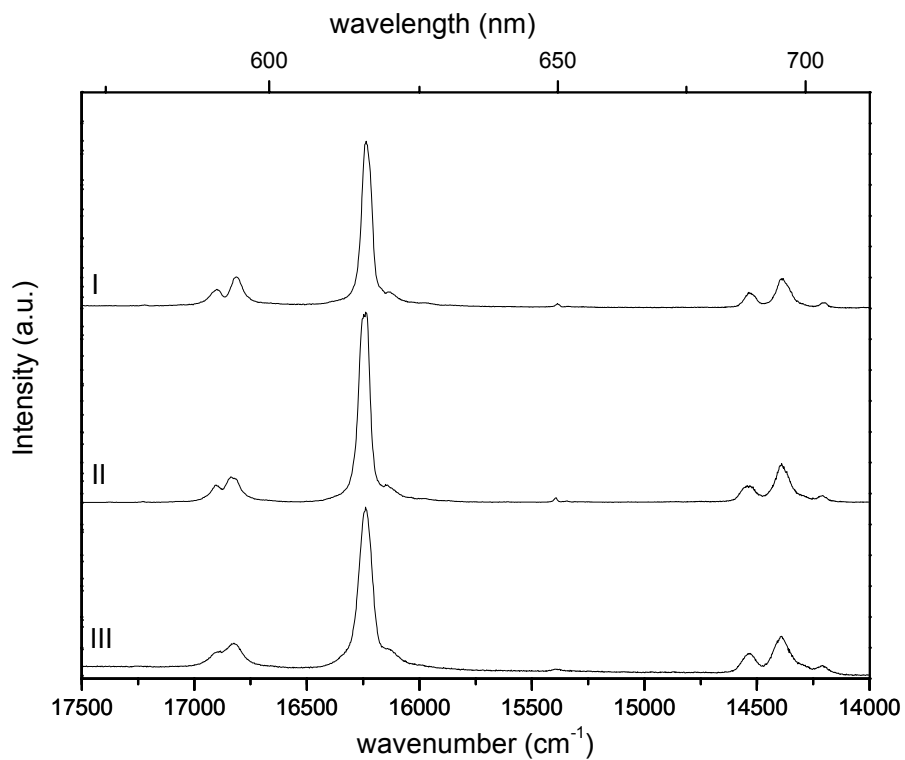


Figure S8. Comparison of the luminescence spectra of the $[\text{choline}]_3[\text{Eu}(\text{dpa})_3]$ in different matrices at room temperature (excitation wavelength is 280 nm):

I : composite PMMA/ionic liquid film; II: dissolved in ionic liquid,

III: dissolved in THF.

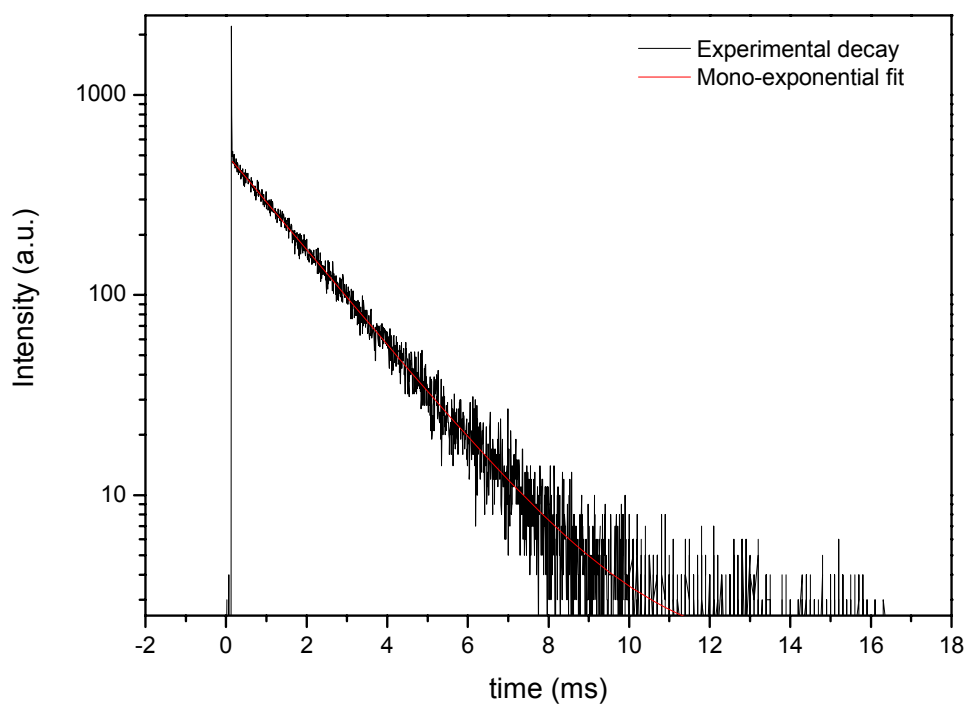


Figure S9. Luminescence decay curve of [choline]₃[Eu(dpa)₃] in the PMMA/IL film, monitored at the $^5D_0 \rightarrow ^7F_2$, at room temperature (black curve) together with the mono-exponential fit. The sample was excited at 280 nm.