

Supporting Information

Smart photopharmacological agents: LaVO₄:Eu³⁺@Vinyl Phosphonate combining luminescence imaging and photoswitchable butyrylcholinesterase inhibition

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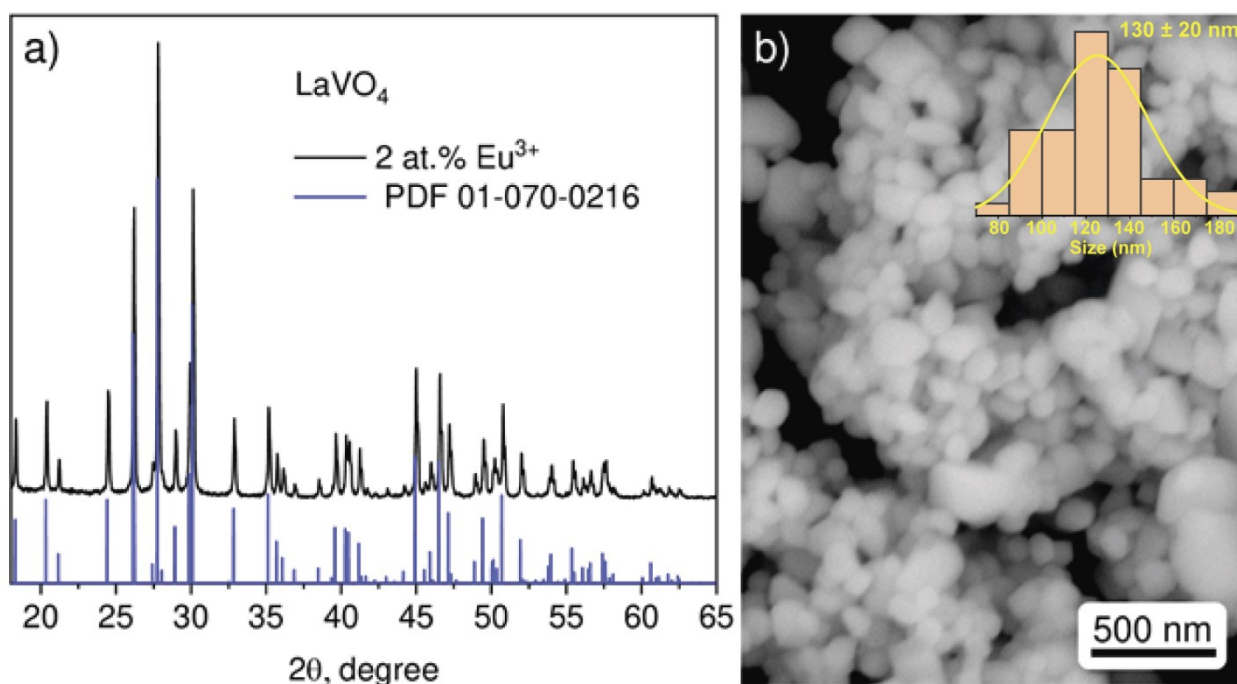


Fig. S1 a) XRD patterns for LaVO₄:Eu³⁺ 2 at.% particles and standard PDF-card of LaVO₄ (01-070-0216); b) SEM image of LaVO₄:Eu³⁺ 2 at.% particles.

Luminescence characterization of NPs LaVO₄:Eu³⁺

Figure S2 show excitation (red) and emission (black) spectra of the LaVO₄:Eu³⁺ 2 at.% nanocrystalline powder. Excitation spectrum measured for ⁵D₀-⁷F₂ transition ($\lambda_{em} = 615$ nm) is dominated by a strong broad charge transfer band (CTB) situated in the UV range. CTB corresponds to the charge transfer in the VO₄³⁻ group¹. Additionally, a series of sharp lines at longer wavelengths attributed to 4f-4f transitions inside Eu³⁺ ions was observed: ⁷F₀-⁵L₇ (380 nm),

${}^7F_0-{}^5L_6$ (393 nm), ${}^7F_0-{}^5D_3$ (412 nm), and ${}^7F_0-{}^5D_2$ (463 nm). Emission spectrum obtained upon 318 nm excitation consists of narrow peaks, which is assigned to the following transitions: ${}^5D_1-{}^7F_0$ (525 nm), ${}^5D_1-{}^7F_1$ (532 and 537 nm), ${}^5D_1-{}^7F_2$ (554 nm), ${}^5D_0-{}^7F_0$ (578 nm), ${}^5D_0-{}^7F_1$ (587 and 594 nm), ${}^5D_0-{}^7F_2$ (615 nm), ${}^5D_0-{}^7F_3$ (651 nm), and ${}^5D_0-{}^7F_4$ (688 and 699 nm)^{2,3}. The most prominent peak corresponds to the forced electric dipole ${}^5D_0-{}^7F_2$ transition, which suggests the absence of inversion symmetry at the Eu^{3+} lattice site in the LaVO_4 host.

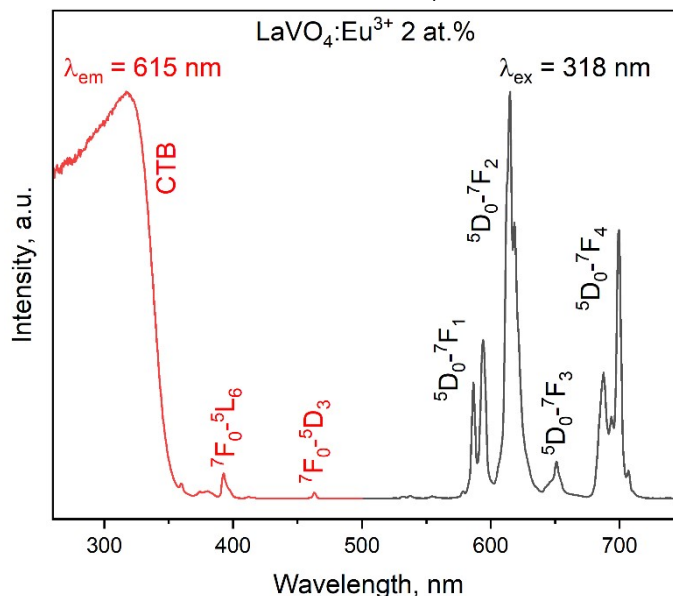


Fig. S2. Excitation (red) and emission (black) spectra of the $\text{LaVO}_4:\text{Eu}^{3+}$ 2 at.% nanocrystalline powder.

References

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