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Supplementary Material of

Size-Dependent High-Pressure Behavior of Pure and Eu^{3+}-Doped Y_2O_3 Nanoparticles: Insights from Experimental and Theoretical Investigations

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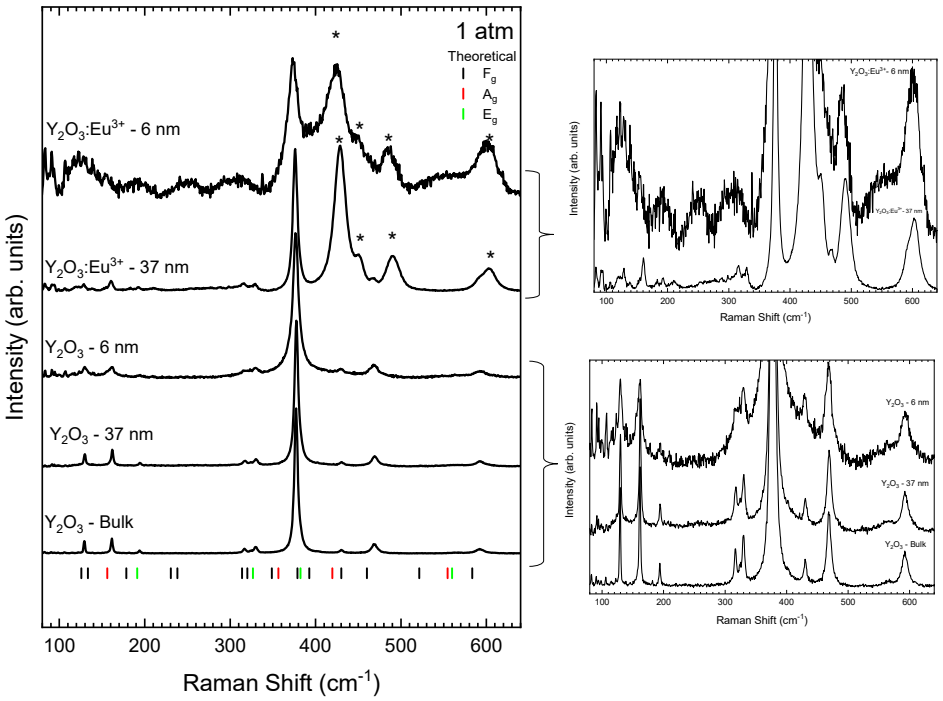

Figure S1. RS measurements of bulk Y_2O_3 and pure and Eu^{3+}-doped Y_2O_3 nanocrystals at ambient pressure (outside the DAC). Peaks marked with * are related to the luminescence of Eu^{3+} ions in the Y_2O_3 lattice.

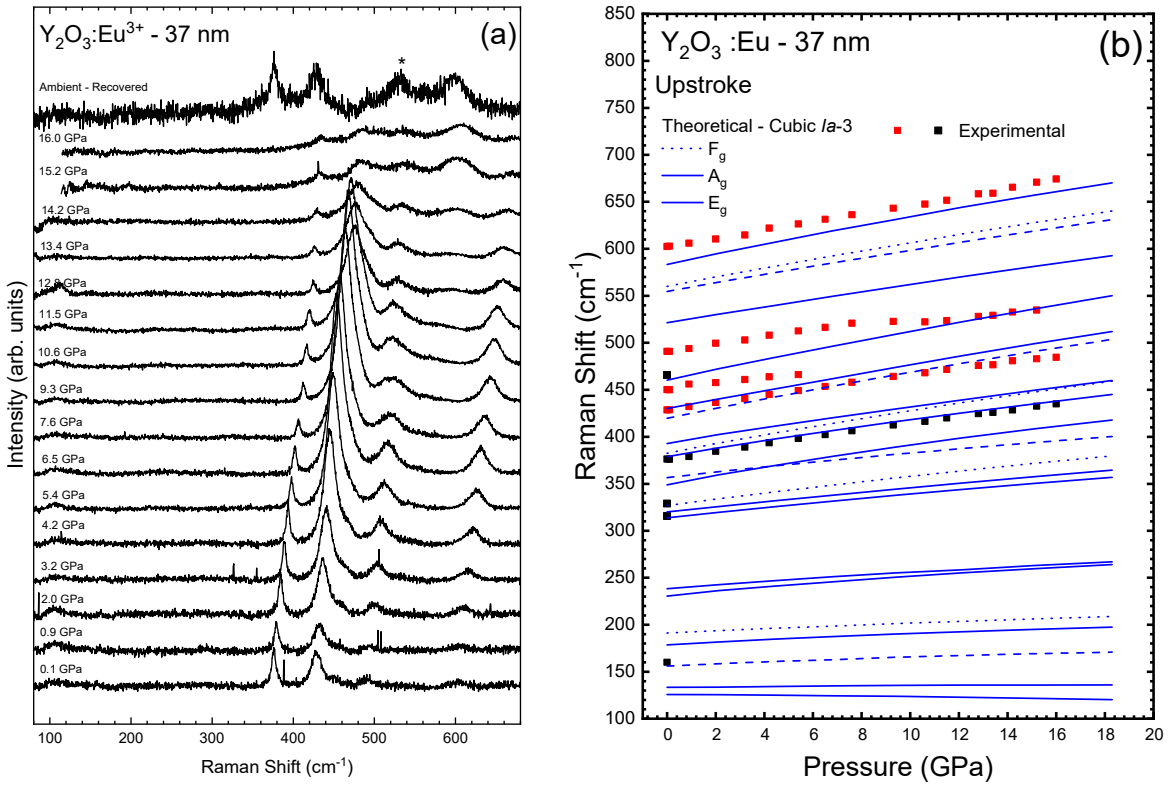

Figure S2. (a) Room-temperature Raman spectra of Y_2O_3:Eu^{3+}-37nm at selected pressures on upstroke. The upper spectrum is related to the recovered sample after decompression and the * indicates a peak unrelated to the initial phase. (b) Pressure dependence of the experimental (symbols) Raman-active frequencies of Y_2O_3:Eu^{3+}-37nm on upstroke. Blue lines represent the theoretical Raman-active frequencies of bulk C-type Y_2O_3. Red symbols represent peaks related to the Eu^{3+} luminescence.

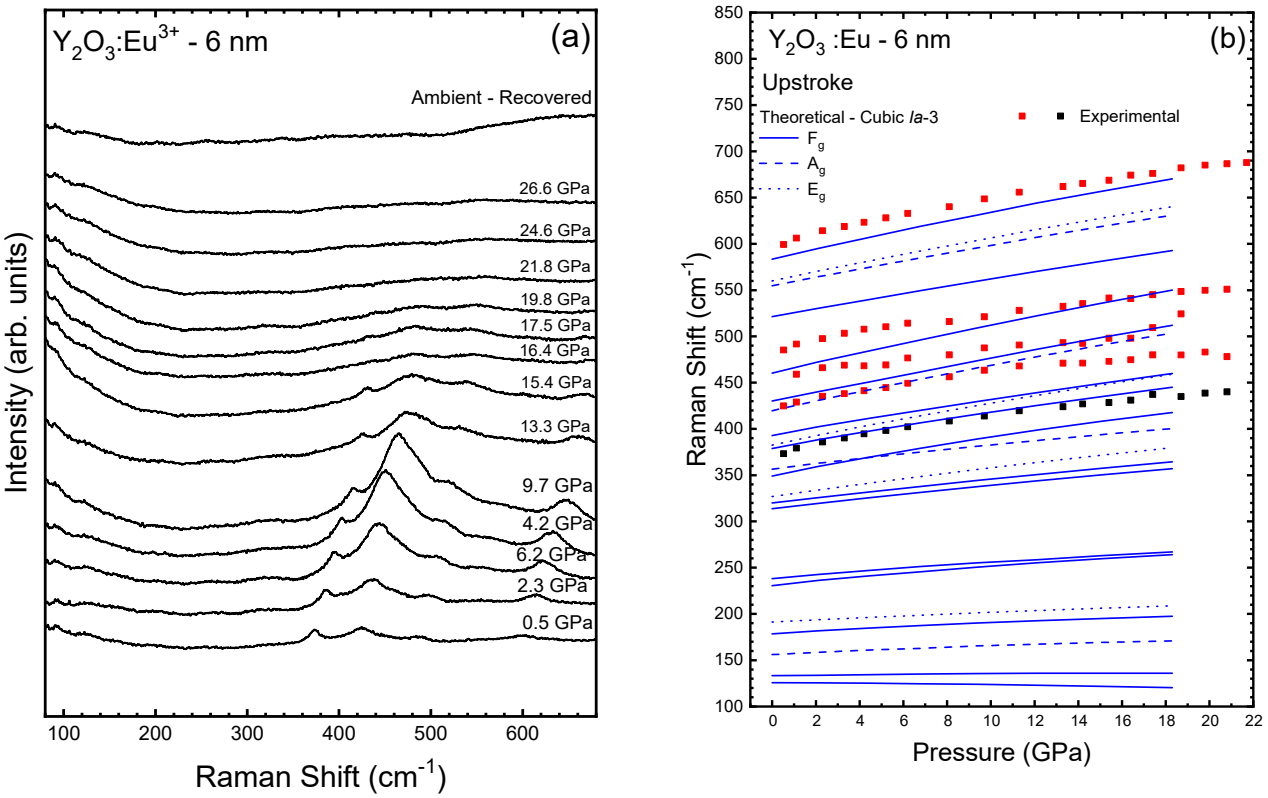

Figure S3. (a) Room-temperature Raman spectra of Y_2O_3:Eu^{3+}-6nm at selected pressures on upstroke. The upper spectrum is related to the recovered sample after decompression. (b) Pressure dependence of the experimental (symbols) Raman-active frequencies of Y_2O_3:Eu^{3+}-6nm on upstroke. Blue lines represent the theoretical Raman-active frequencies of bulk C-type Y_2O_3. Red symbols represent peaks related to the Eu^{3+} luminescence.

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