Supplementary Information (SI) for Materials Horizons.
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SUPPORTING INFORMATION

Transparent porous films with real refractive index close to unity for photonic applications

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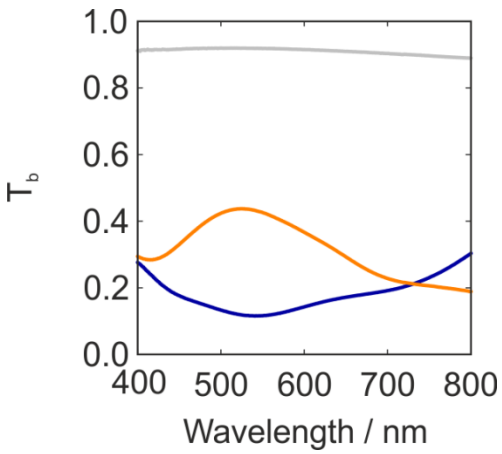

Figure S1. Ballistic transmittance spectra of an ultralow *n* SiO_2 film devoid of scattering centres (gray line) and integrating crystalline spherical TiO_2 particles of radii r = 146 ± 15 nm (blue line) and r = 250 ± 30 nm (orange line), both with a filling fraction *ff* = 5%.

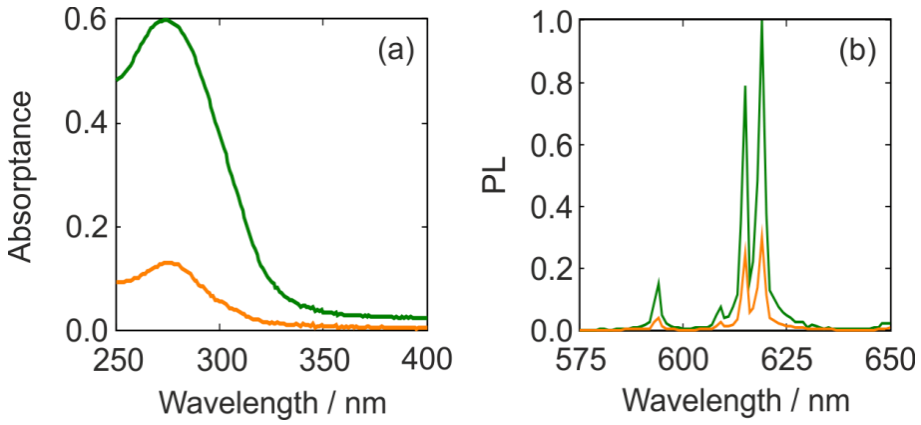

Figure S2. (a) Absorptance of the reference, which is a $VO_4Gd:Eu^{3+}$ nanophosphor layer, (green line) and of a highly porous SiO_2 film with embedded $VO_4Gd:Eu^{3+}$ nanoparticles (orange line). (b) Photoluminescence spectra of the reference (green line) and of a highly porous SiO_2 film with embedded $VO_4Gd:Eu^{3+}$ nanoparticles (orange line). These results are raw results, i.e., not corrected by the absorptance and PLQY of the nanophosphors in each material.

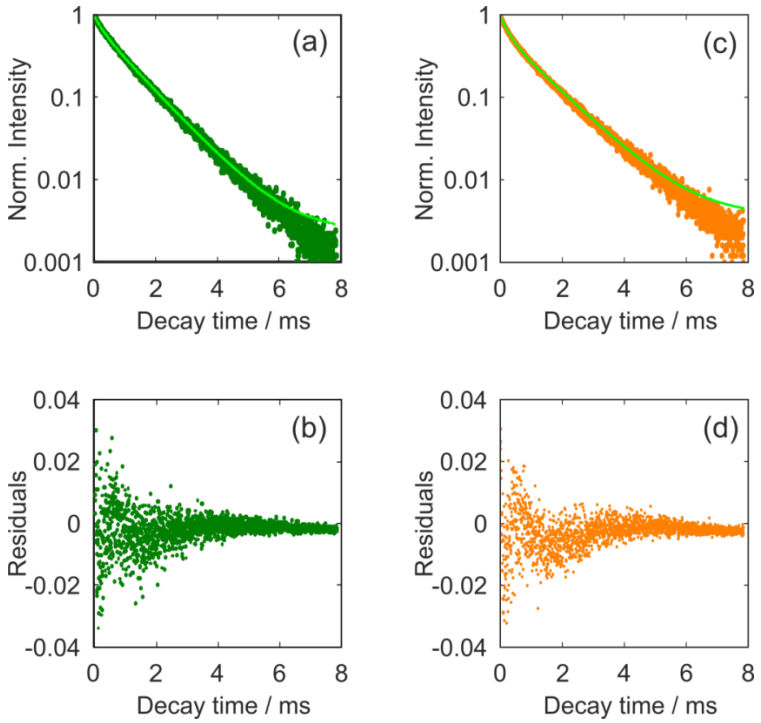

Figure S3. Time resolved PL decays of the Eu^{3+} cations of the nanophosphors under excitation at λ = 276 nm and the corresponding curves (bright green line) resulting from fitting the decays to a bi-exponential model with their corresponding residuals. Data correspond to the reference, which is a $VO_4Gd:Eu^{3+}$ nanophosphor layer, (a) and (b), and a highly porous SiO_2 film with embedded $VO_4Gd:Eu^{3+}$ nanoparticles, (c) and (d).

	τ_1(ms)	$\%_1$	τ_2(ms)	$\%_2$	t (ms)
$VO_4Gd:Eu^{3+}$ nanophosphor layer	0.28	8	1.10	92	1.04
$VO_4Gd:Eu^{3+}$ in porous matrix	0.25	12	1.21	88	1.11

Table S1. Fitting parameters of the PL decays shown in Figure S3.