Electronic Supplementary Material (ESI) for Nanoscale.

Electronic Supplementary Information

Core-decomposition-facilitated fabrication of hollow rare-earth silicate nanowalnuts from core-shell structures via Kirkendall effect

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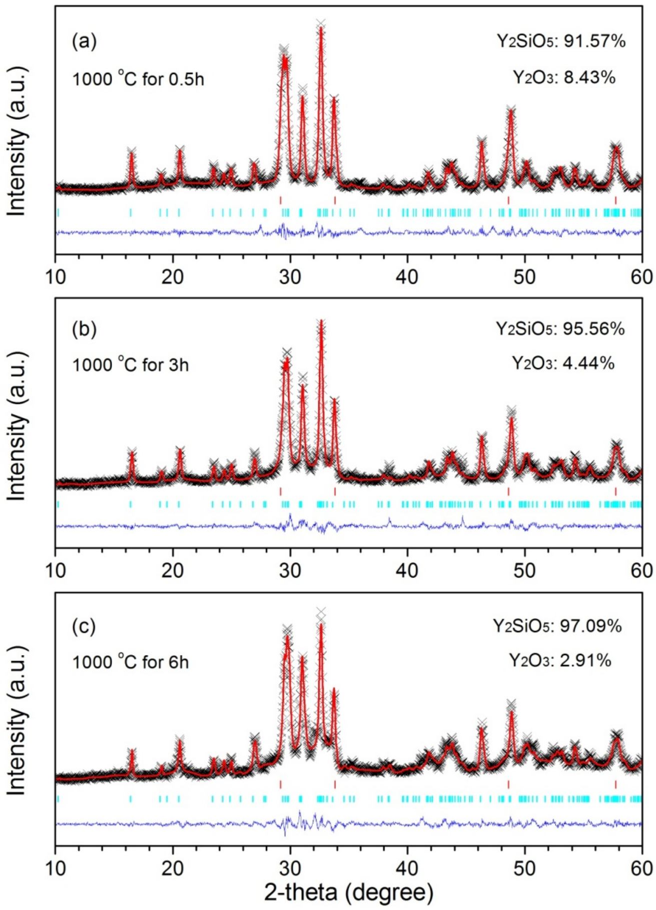

Figure S1. Refined XRD patterns of products sintering at 1000 °C for 0.5 h (a), 3 h (6) and 6 h (c). The refined percentage of Y_2O_3 and Y_2SiO_5 content is also shown here. Crosses: experimental; red solid line: calculated XRD patterns; blue solid line: difference. Two set of tick marks show the Bragg reflection positions of the phases Y_2O_3 (red) and Y_2SiO_5 (cyan).

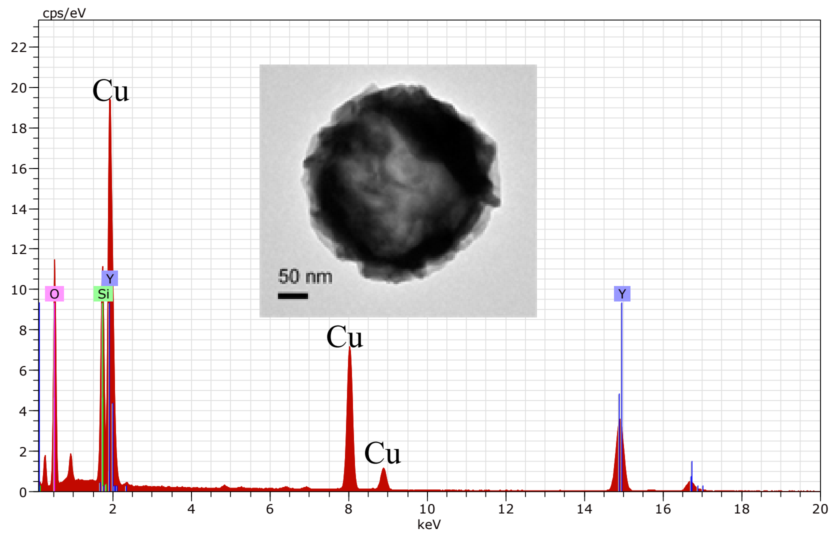

Figure S2. EDX spectrum of hollow Y_2SiO_5 nanowalnuts, inset shows the TEM image. The atomic ratios of Y, Si and O is 3:2:5. Cu signal comes from the Cu support substrate.

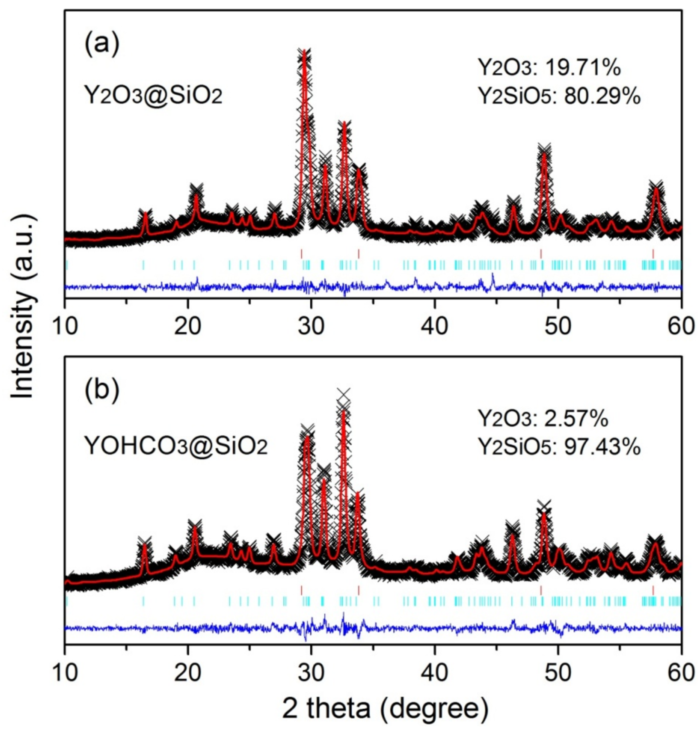

Figure S3. Refined XRD patterns of products from annealing $Y_2O_3@SiO_2$ (a) and $YOHCO_3@SiO_2$ (b) core-shell nanostructures at 950 °C for 3 h.

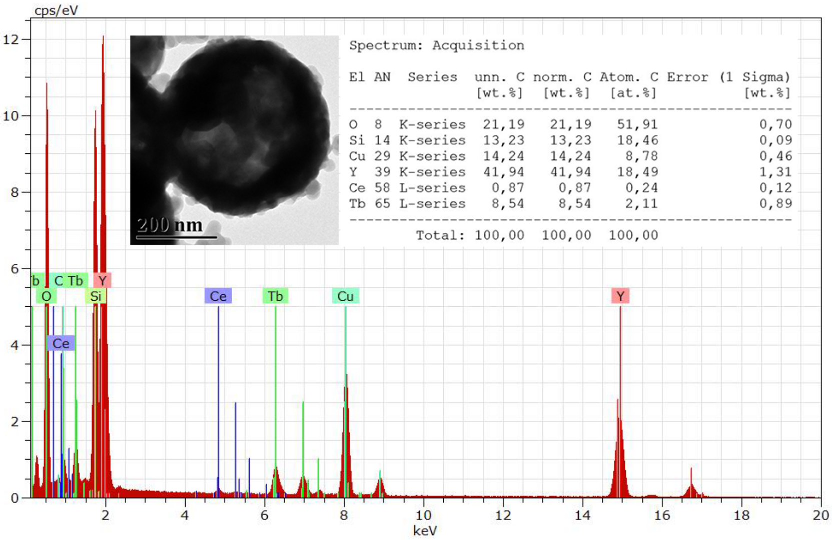

Figure S4. EDX spectrum of hollow Y_2SiO_5: 1%Ce^{3+}, 9%Tb^{3+} nanowalnuts, the inset shows the TEM image. The atomic ratios of Y, Ce and Tb is estimated to be 18.49: 0.24: 2.11, which is very closed to 90: 1: 9.

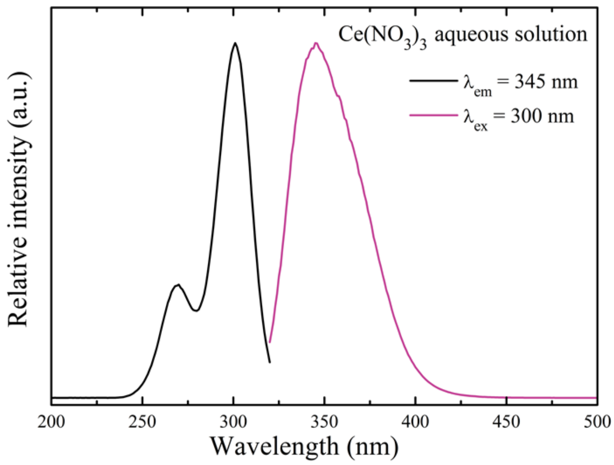

Figure S5. Photoluminescence excitation and emission spectra of Ce(NO3)3 aqueous solution.

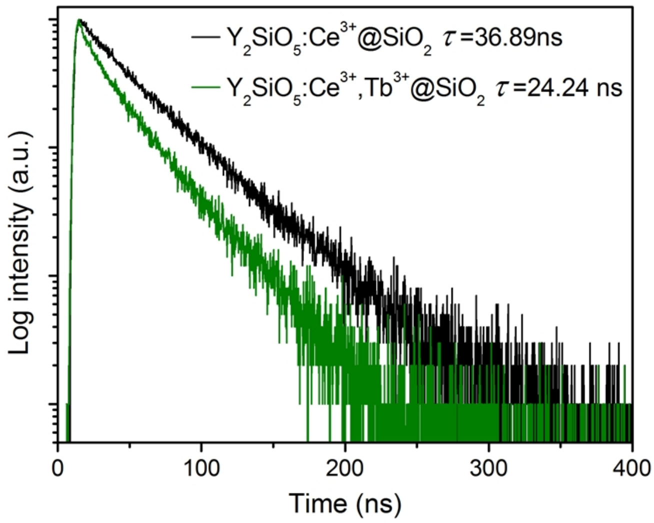

Figure S6. Decay curves of $Y_2SiO_5:Ce^{3+}@SiO_2$ and $Y_2SiO_5:Ce^{3+}$, $Tb^{3+}@SiO_2$ nanoparticles.