

## Europium-Doped Y<sub>2</sub>O<sub>3</sub>-Coated Diatomite Nanomaterials: Hydrothermal Synthesis, Characterization, Optical Study with Enhanced Catalytic Performance

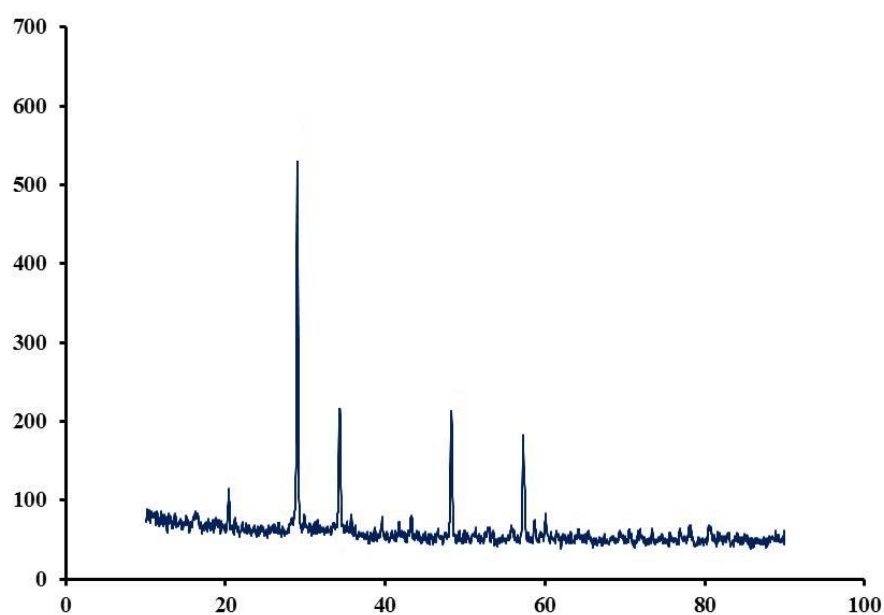


Figure S1. XRD pattern of diatom-coated with 6% Eu-doped Y<sub>2</sub>O<sub>3</sub> nanoparticles.

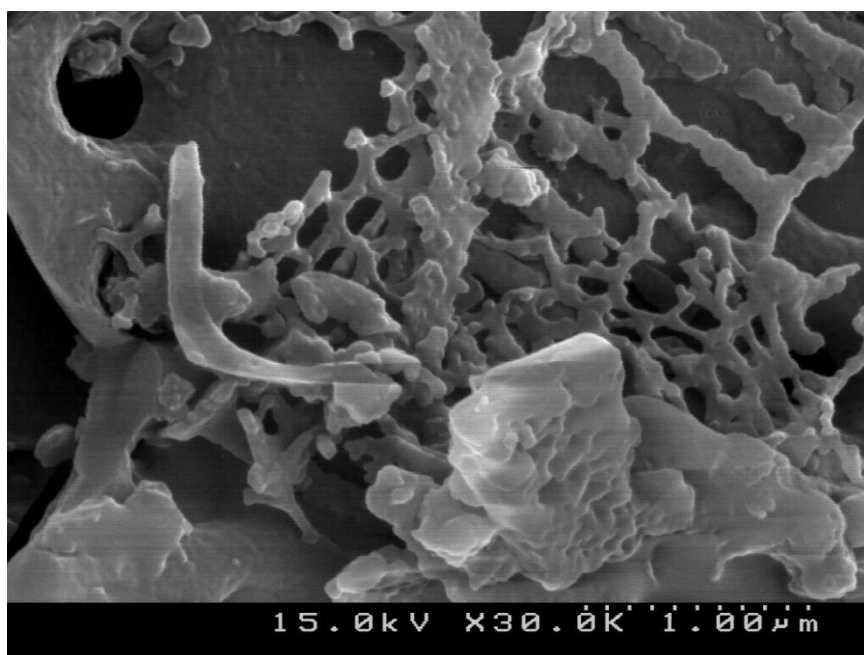


Figure S2. SEM image of 2% Eu-doped Y<sub>2</sub>O<sub>3</sub> coated biosilica.

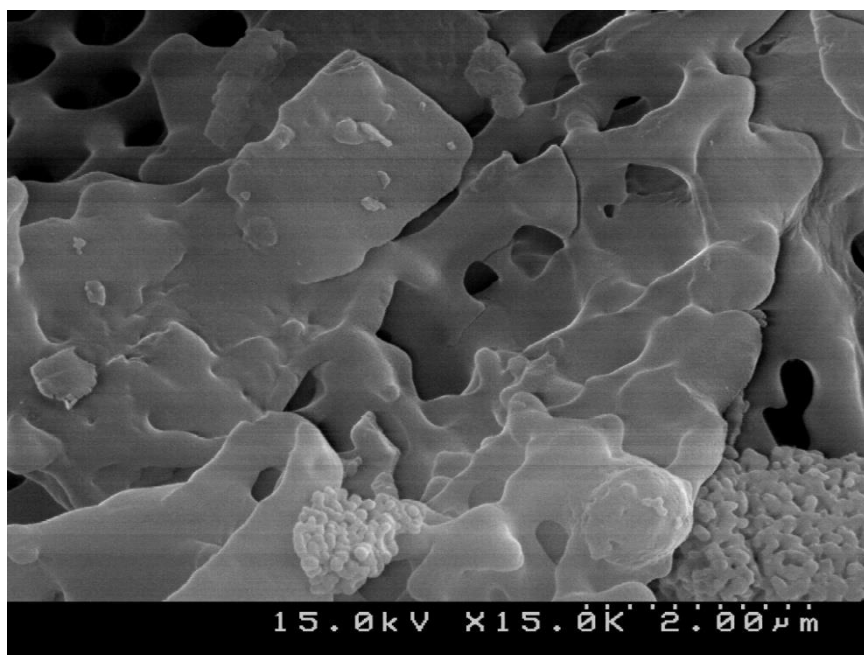


Figure S3. SEM image of 8% Eu-doped Y<sub>2</sub>O<sub>3</sub> coated biosilica.

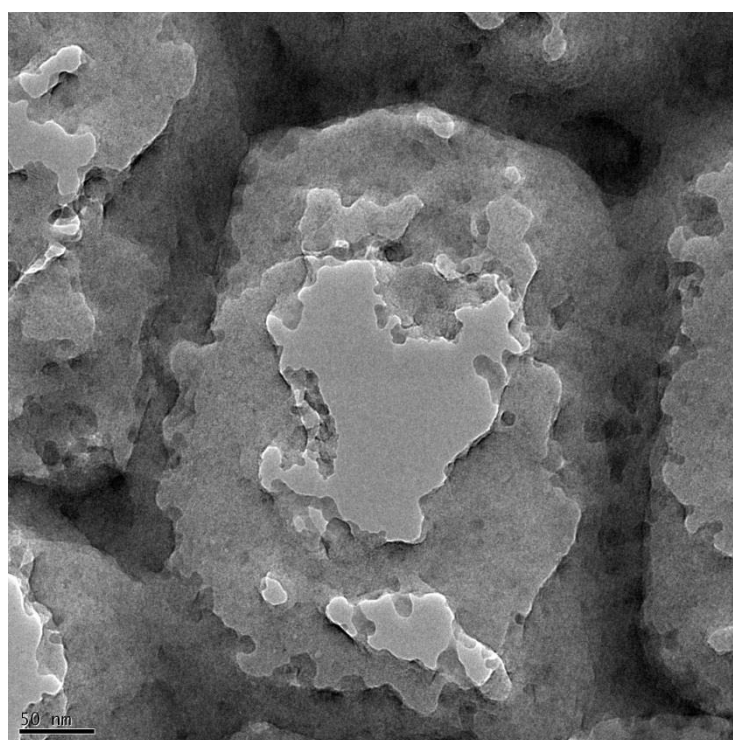


Figure S4. TEM image of 2% Eu-doped Y<sub>2</sub>O<sub>3</sub>-coated diatomite.

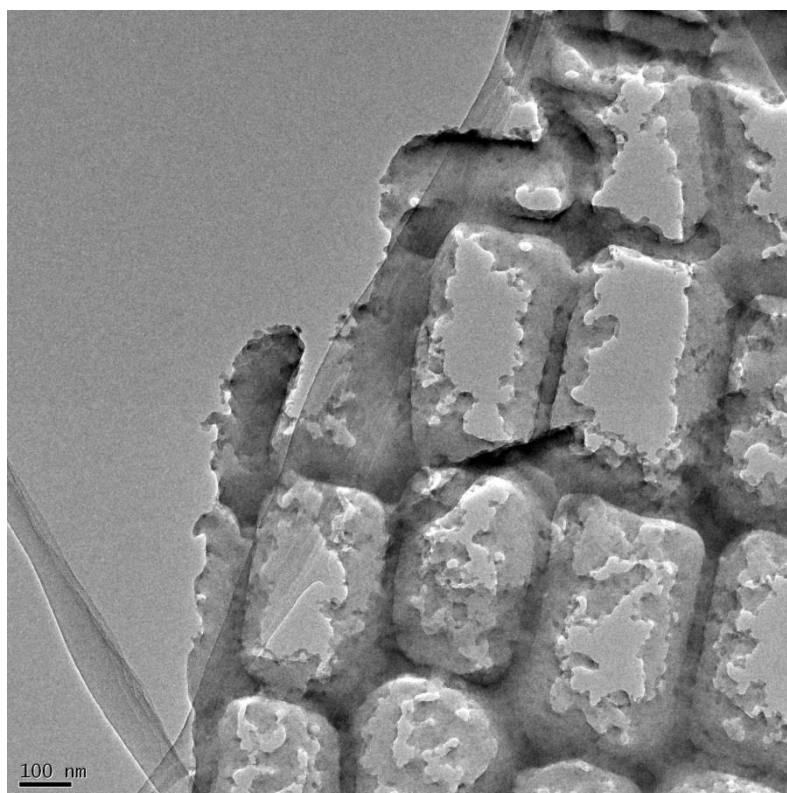


Figure S5. TEM image of 8% Eu-doped  $\text{Y}_2\text{O}_3$ -coated diatomite.

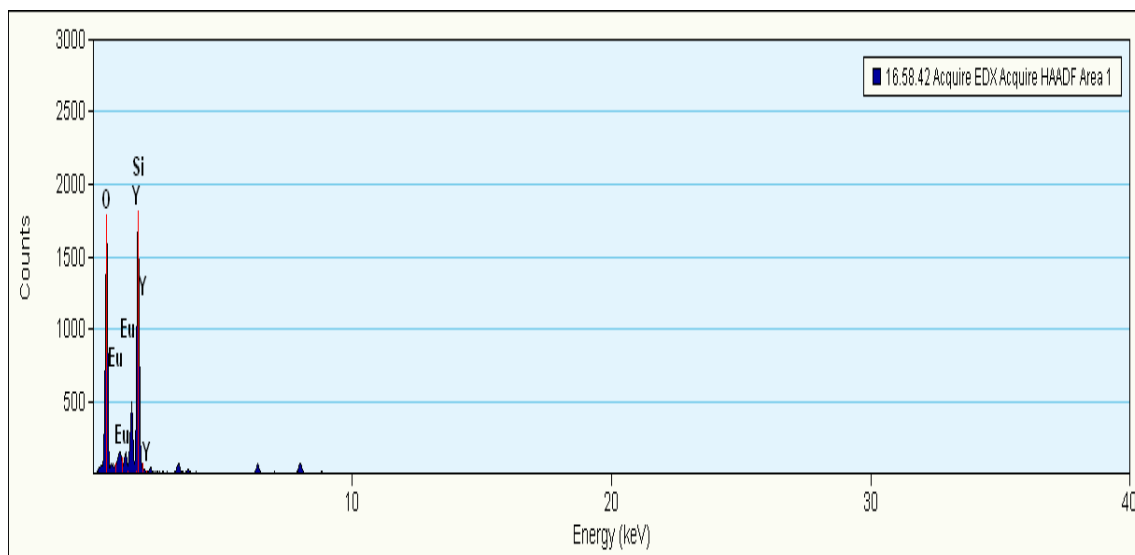


Figure S6. EDX spectra of 2% Eu-doped  $\text{Y}_2\text{O}_3$ -coated diatomite.

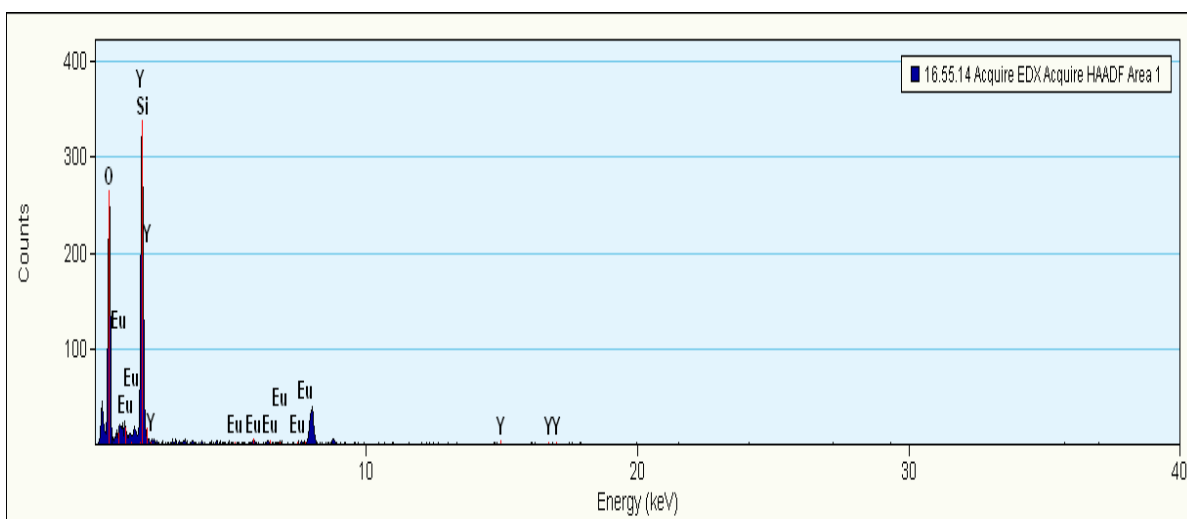


Figure S7. EDX spectra of 2% Eu-doped  $\text{Y}_2\text{O}_3$ -coated diatomite.

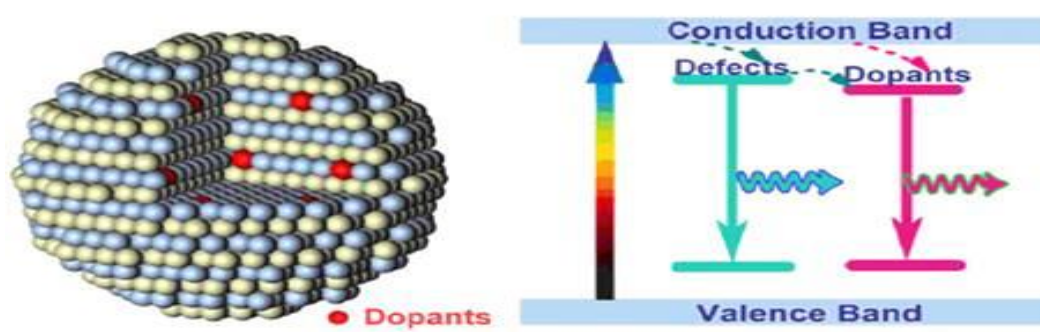


Figure S8. Schematic band-gap model for the luminescence of  $\text{Eu}^{3+}$  doped in  $\text{Y}_2\text{O}_3$ .