

## Supporting Information

### Full spectrum core-shell phosphor under ultraviolet excitation

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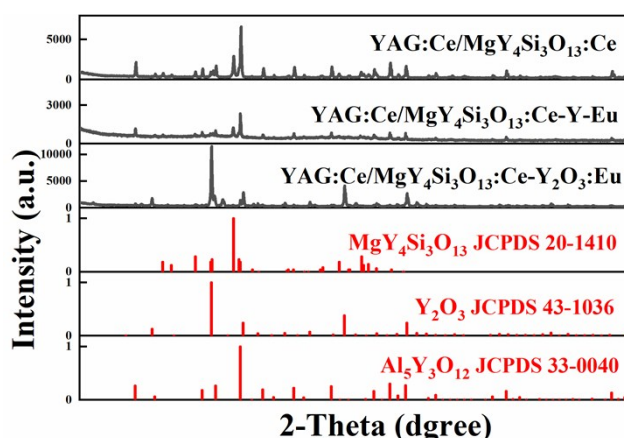
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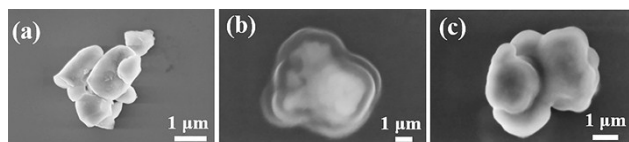
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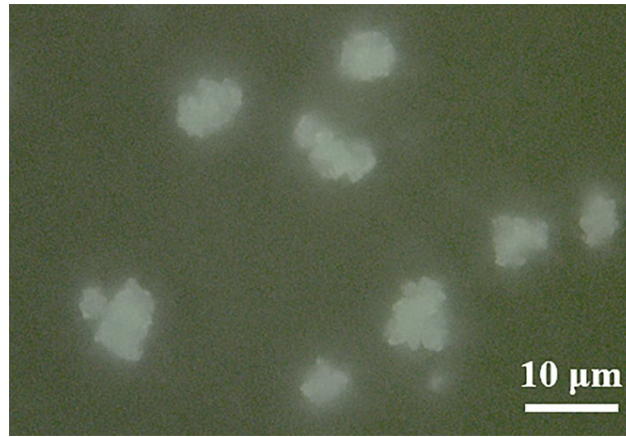
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**Fig. S1** X-Ray diffraction patterns of YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce core, Y-Eu-compound coated on the YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce core and YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce-Y-Eu structure after calcination



**Fig. S2** SEM image of (a) YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce composite core; (b) YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce-Y-Eu composite precursor and (c) YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce-Y<sub>2</sub>O<sub>3</sub>:Eu composite core-shell phosphor



**Fig. S3** Microstructure image of YAG:Ce/MgY<sub>4</sub>Si<sub>3</sub>O<sub>13</sub>:Ce-Y<sub>2</sub>O<sub>3</sub>:Eu composite core-shell phosphor taken by a confocal laser scanning microscope