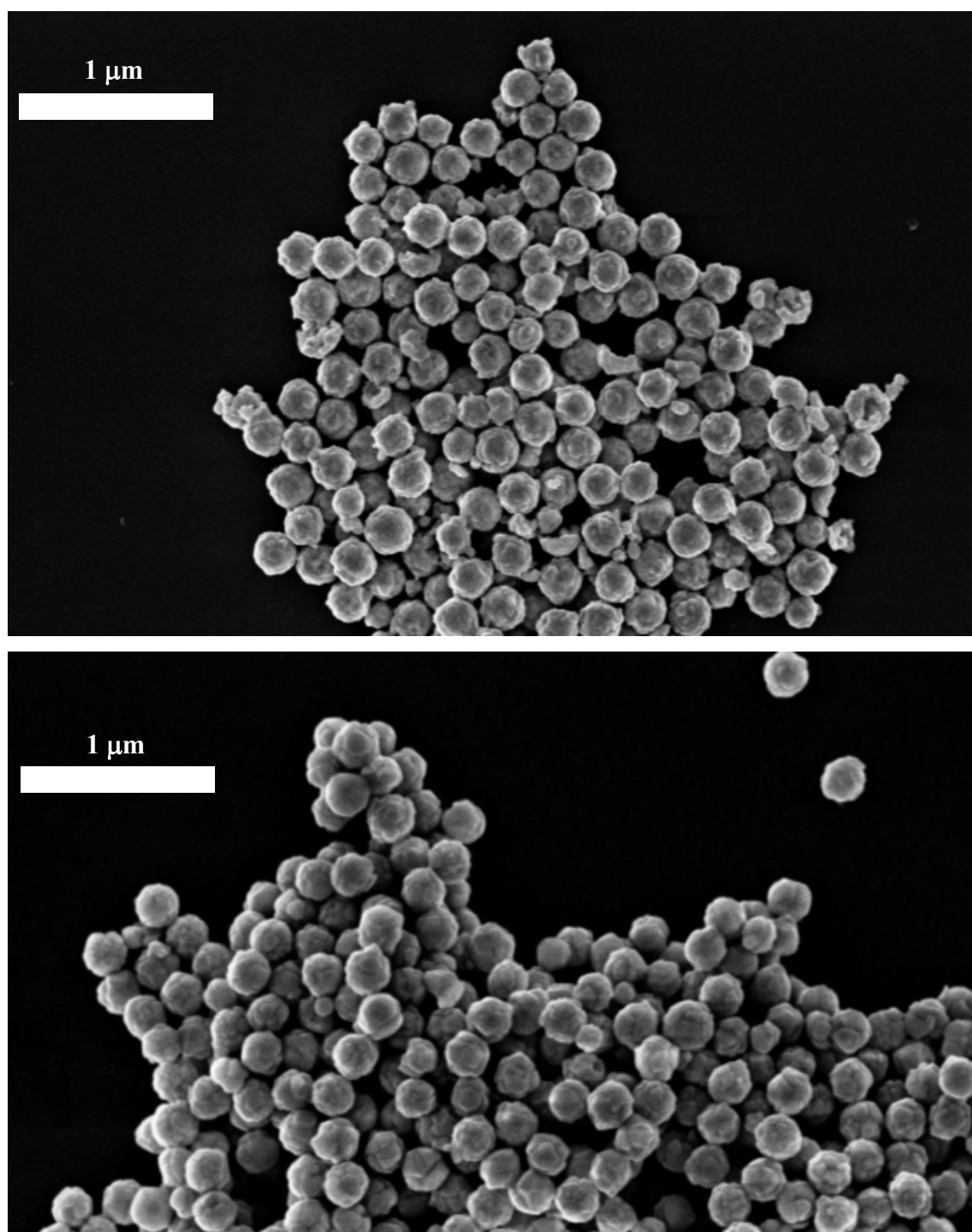
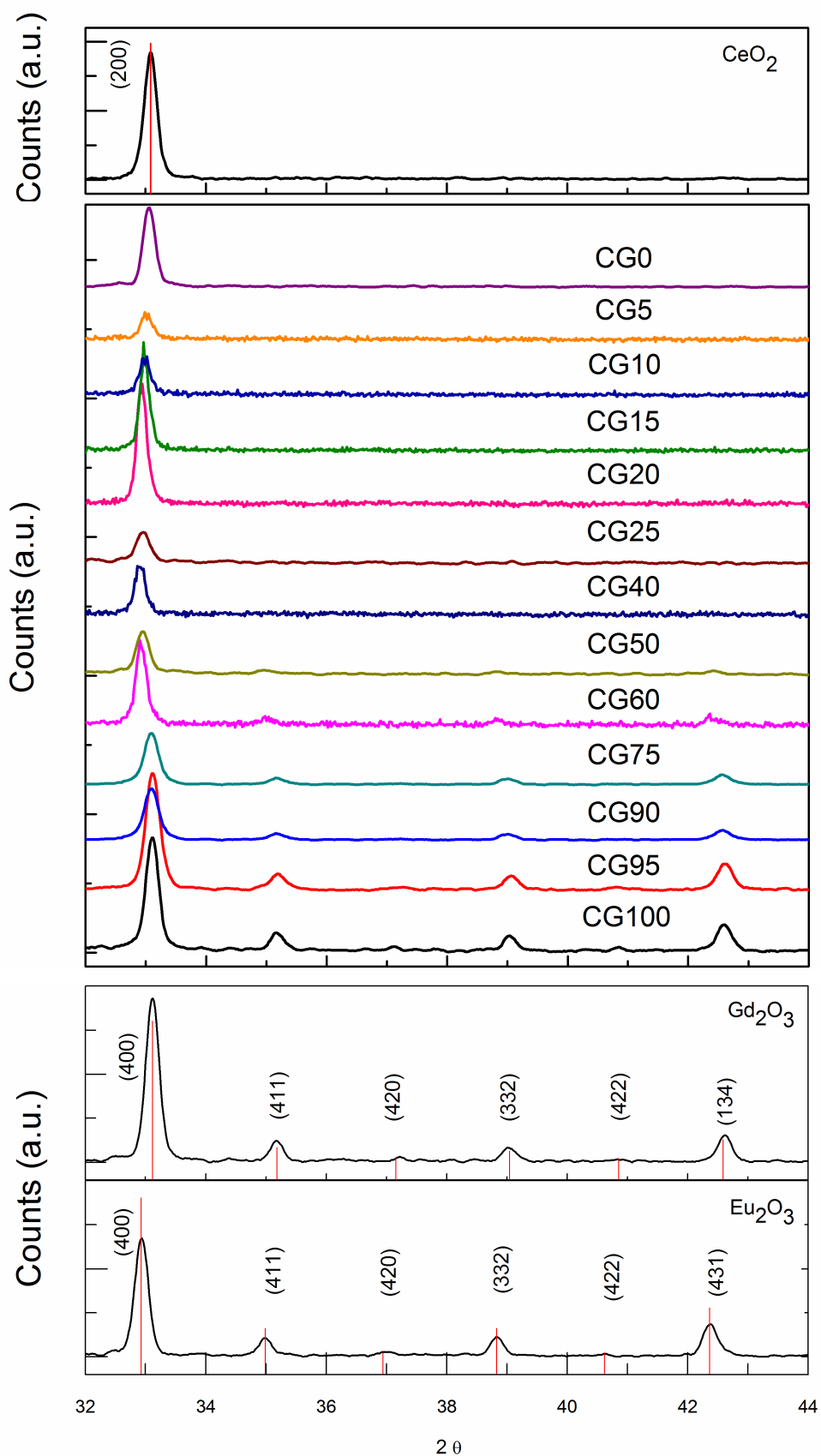


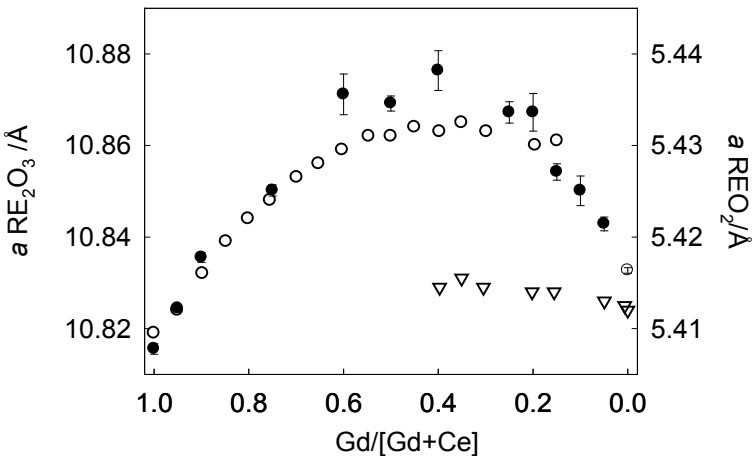
**Ce(IV)-Gd(III)-Eu(III) oxide phosphors: synthesis of monodispersed particles and their enhanced luminescent properties.**



**Figure S1.** FESEM images of samples CG0 (upper image) and CG100 (lower image).



**Figure S2.** PXRD patterns of samples GD0-100 and indexed Gd<sub>2</sub>O<sub>3</sub> (PDF#43-1014), Eu<sub>2</sub>O<sub>3</sub> (PDF#34-0392) and CeO<sub>2</sub> (PDF#65-2975) obtained and measured under similar conditions.



**Figure S3.** Evolution of cell size as a function of Gd(III) to Ce(IV) ratio of samples CG0 to CG100 (●). The values reported in ref.<sup>1</sup> for Gd(III)-Ce(IV) binary *c*-type (○) and fluorite-type (▽) oxides are also presented.

**Table S1.** Nominal and observed composition of the samples expressed as the percentage of each cation over total cationic content, determined by ICP analysis.

| Sample | Nominal composition |       |       | Observed Composition |          |          |
|--------|---------------------|-------|-------|----------------------|----------|----------|
|        | %Eu                 | %Ce   | %Gd   | %Eu                  | %Ce      | %Gd      |
| CG0    | 5                   | 95    | -     | 4.9±0.2              | 95.1±2.5 | -        |
| CG5    | 5                   | 90.25 | 4.75  | 4.8±0.2              | 90.5±2.5 | 4.7±0.2  |
| CG10   | 5                   | 85.5  | 9.5   | 5.1±0.2              | 85.1±2.5 | 9.8±0.4  |
| CG15   | 5                   | 80.75 | 14.25 | 4.9±0.2              | 80.7±2.2 | 14.4±0.3 |
| CG20   | 5                   | 76    | 19    | 5.2±0.2              | 75.2±2.2 | 19.6±0.8 |
| CG25   | 5                   | 71.25 | 23.75 | 5.1±0.2              | 72.0±2.5 | 22.9±0.8 |
| CG40   | 5                   | 57    | 38    | 4.8±0.2              | 58.1±2   | 37.1±1.5 |
| CG50   | 5                   | 47.5  | 47.5  | 4.8±0.2              | 46.5±1.8 | 48.7±1.8 |
| CG60   | 5                   | 38    | 57    | 4.9±0.2              | 39±1.5   | 56.1±2   |
| CG75   | 5                   | 23.75 | 71.25 | 5.0±0.2              | 23.6±0.8 | 71.4±2.5 |
| CG90   | 5                   | 9.5   | 85.5  | 4.9±0.2              | 9.9±0.4  | 85.2±2.5 |
| CG95   | 5                   | 4.75  | 90.25 | 5.1±0.2              | 4.9±0.2  | 90.0±2.5 |
| CG100  | 5                   | -     | 95    | 4.8±0.2              | -        | 95.2±2.5 |

**Table S2.** Ionic radii.

| Cation  | Coordination number | r/Å   |
|---------|---------------------|-------|
| Gd(III) | VI                  | 0.938 |
|         | VII                 | 1     |
|         | VIII                | 1.053 |
| Eu(III) | VI                  | 0.947 |
|         | VII                 | 1.01  |
|         | VIII                | 1.066 |
| Ce(IV)  | VI                  | 0.87  |
|         | VII                 |       |
|         | VIII                | 0.97  |