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# Yb-doped $\text{Gd}_2\text{O}_2\text{CO}_3$ : structure, microstructure, thermal and magnetic behaviour

*Cristina Artini<sup>a, b, 1</sup>, Federico Locardi<sup>a</sup>, Marcella Pani<sup>a, c</sup>, Ilaria Nelli<sup>a</sup>, Federico Cagliaris<sup>c</sup>,  
Roberto Masini<sup>d</sup>, Jasper Rikkert Plaisier<sup>e</sup>, Giorgio Andrea Costa<sup>a, c</sup>*

<sup>a</sup> DCCI, Department of Chemistry and Industrial Chemistry, University of Genova, 16146 Genova, Italy

<sup>b</sup> CNR-ICMATE, 16149 Genova, Italy

<sup>c</sup> CNR-SPIN Genova, 16152 Genova, Italy

<sup>d</sup> CNR-IMEM, 16146 Genova, Italy

<sup>e</sup> Elettra - Sincrotrone Trieste S.C.p.A., 34149 Basovizza, Trieste, Italy

## Abstract

Structural and microstructural features, as well as thermal and magnetic properties of Yb-doped  $\text{Gd}_2\text{O}_2\text{CO}_3$ , were investigated with the aim to clarify the location and the oxidation state of Yb within the structure, and its role in driving the extent of the  $(\text{Gd}_{1-x}\text{Yb}_x)_2\text{O}_2\text{CO}_3$  solid solution. Yb is found in the 3+ oxidation state and it enters the structure only at the rare earth atomic site; the solubility limit results to be located in the close vicinity of  $x = 0.25$ , and thermal analyses reveal a linear decrease of the decomposition temperature with increasing the Yb amount, in agreement with

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<sup>1</sup> corresponding author: artini@chimica.unige.it

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