

Table 1 – Final agreement indexes:  $R_p$ ,  $R_{wp}$  and  $R_B$  are the profile, weighted profile and the Bragg factors, respectively.  $\chi^2$  is defined as the square of  $R_{wp}/R_{exp}$  ratio.

Sample	$R_p$	$R_{wp}$	$R_B$	$\chi^2$
Gd33Sm67_10	11.1	16.6	2.43	1.36
Gd33Sm67_20	8.60	14.4	1.48	1.20
Gd33Sm67_30	13.3	18.6	3.20	1.55
Gd33Sm67_40	11.3	17.9	5.79	1.32
Gd33Sm67_50	11.8	18.9	5.35	1.37
Gd33Sm67_60	12.9	19.7	5.88	1.32
Gd67Sm33_10	11.8	18.7	2.20	1.42
Gd67Sm33_20	11.2	19.4	2.44	1.35
Gd67Sm33_30	12.9	20.7	2.96	1.31
Gd67Sm33_40	11.2	17.6	6.38	1.29
Gd67Sm33_50	12.2	18.5	5.75	1.32
Gd67Sm33_60	14.3	20.7	6.62	1.42

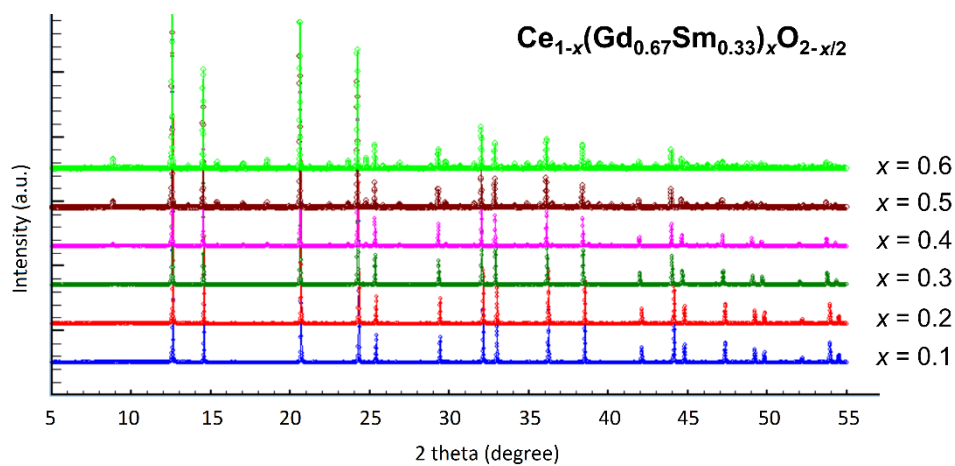


Figure 1 - Stacked diffractograms of samples belonging to the series  $Ce_{1-x}(Gd_{0.67}Sm_{0.33})_xO_{2-x/2}$ .

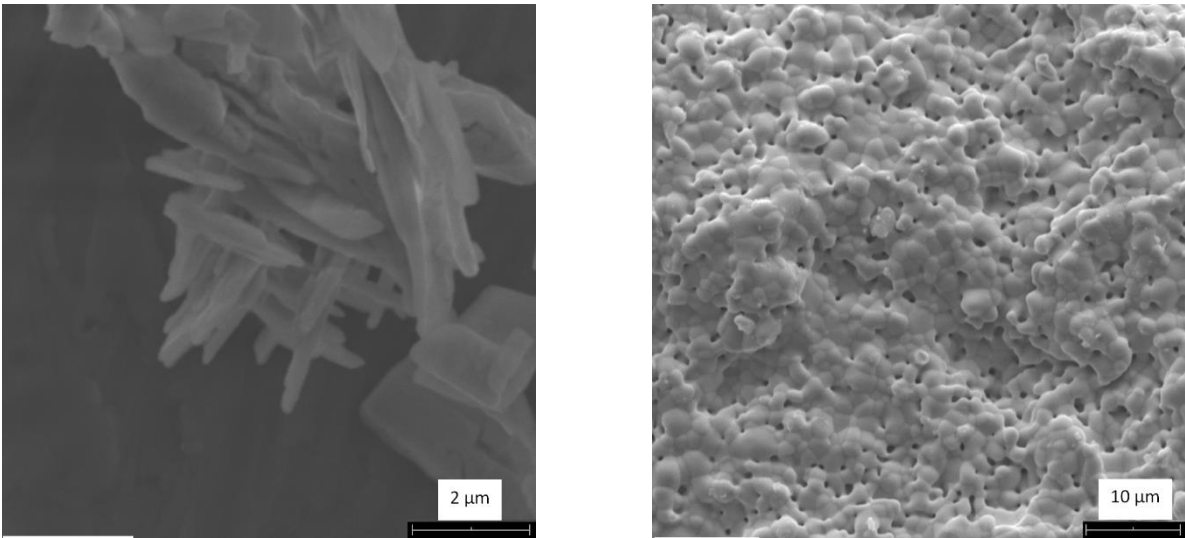


Figure 2 - Microphotograph taken by a) secondary electrons on powders of sample Gd67Sm33\_20 and b) backscattered electrons on sintered Gd67Sm33\_30.

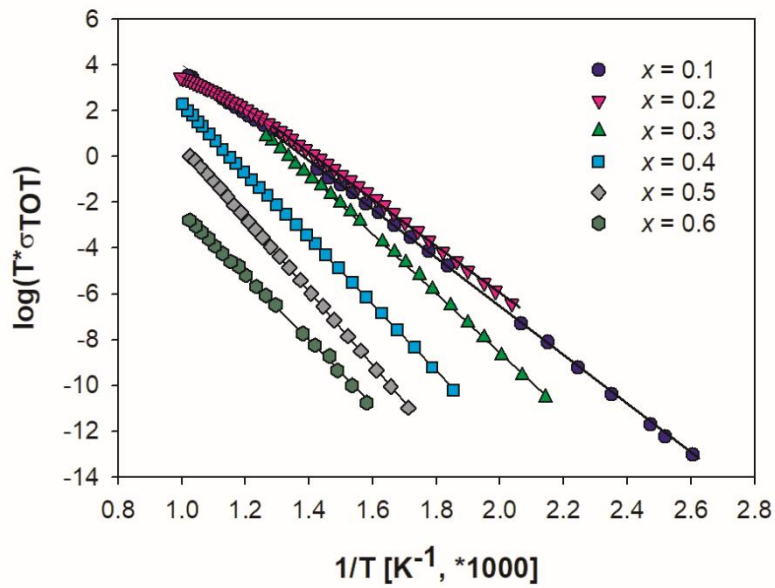


Figure 3 -  $\sigma$  Arrhenius plots for the  $\text{Ce}_{1-x}(\text{Gd}_{0.67}\text{Sm}_{0.33})_x\text{O}_{2-x/2}$  system. Solid lines linearly fit experimental data.