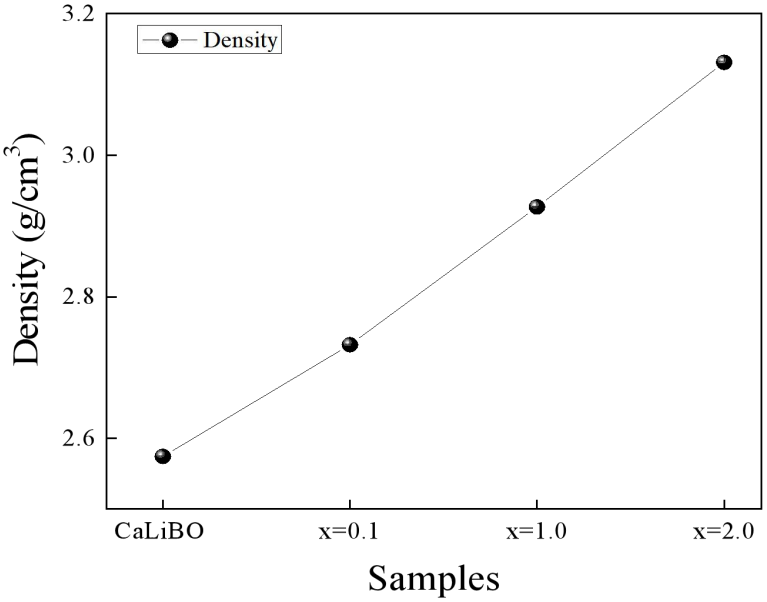
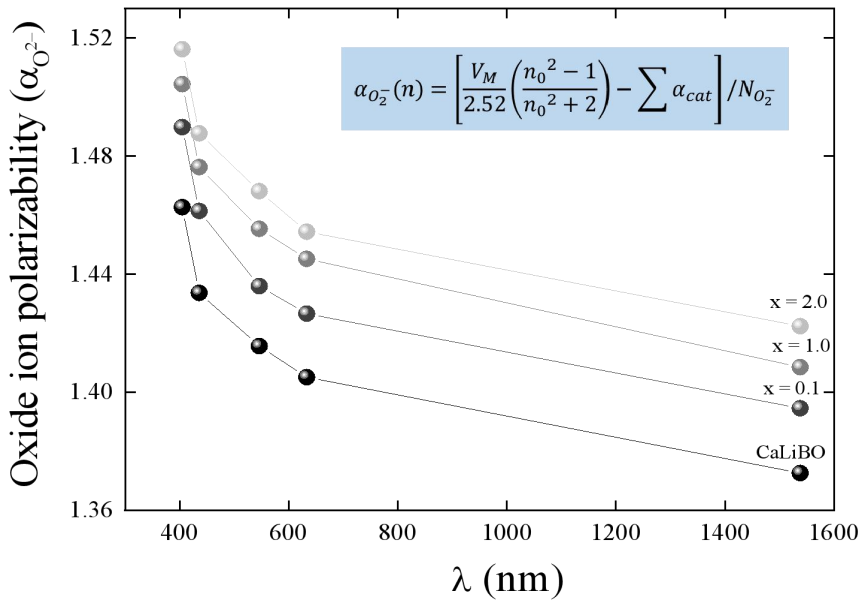
Supplementary data

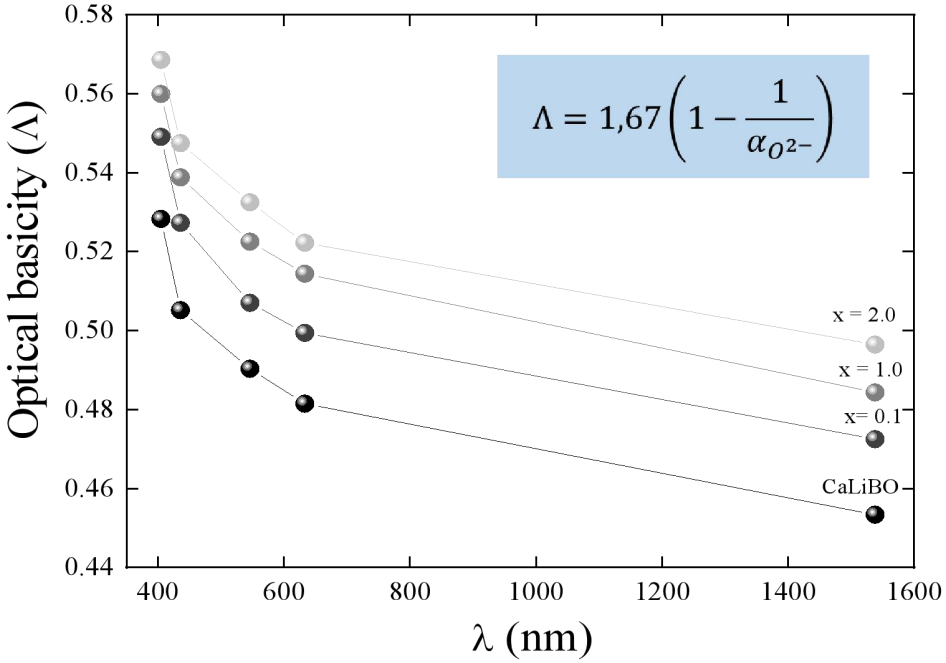
- Graph of the density values as a function of the samples. Showing that the addition of rare earth ions (Tb^{3+} and Yb^{3+}) increase the density of the glasses.



- Graph of oxide ion polarizability (α_O^{-2}) as a function of wavelength. This polarizability is assigned to the oxide ions present in the material. In the inset of the graph is the equation used to determine the α_O^{-2}.



- Optical basicity (Λ) graph as a function of the wavelength. Optical basicity is used to measure the ability of the glass to donate negative ion charge (the density of the electron carried by the oxygen). In the inset of the graph is the equation used for the determination of Λ.



- The following tables contain in sequence the parameters g (adimensional anarmonicity) and s (effective oscillator force) obtained from the adjustment using the BGO model (given by equation y in the table) for CaliBO, x = 0.1, x = 1.0 and x = 2.0 respectively. Equation n0 given in the table is the Sellmeier equation with the Sellmeier coefficients of each sample.

Model	BGO (User)

Equation	n0 = ((2,29778+((0,2391*(x^2))/((x^2)-0,0564))+((0,5786*(x^2))/((x^2)-79)))^(1/2));
	A = (((n0^2)+2)^2);
	B = (((n0^2)-1)^2);
	y = ((5*A*B*g*s)/((6*2,997E8)*(1,054E-27)*(1,8556E16)*(1,0796E23)*(n0^2)));

Plot	CaLiBo 0
g	0.81958 ± 0.04054
s	2 ± 0
Reduced Chi-Sqr	9.63468E-41
R-Square(COD)	-0.05539
Adj. R-Square	-0.05539

Model	BGO1 (User)

Equation	n0 = ((2,4299+((0,1225*(x^2))/((x^2)-0,0852))+((0,9217*(x^2))/((x^2)-98)))^(1/2));
	A = (((n0^2)+2)^2);
	B = (((n0^2)-1)^2);
	y = ((5*A*B*g*s)/((6*2,997E8)*(1,054E-27)*(1,8276E16)*(1,0608E23)*(n0^2)));

Plot	CaLiBo 01
g	0.83735 ± 0.04395
s	2 ± 0
Reduced Chi-Sqr	1.24124E-40
R-Square(COD)	-0.05498
Adj. R-Square	-0.05498

Model	BGO_CaLiBo1 (User)

Equation	n0 = ((2,4624+((0,1131*(x^2))/((x^2)-0,0868))+((1,1537*(x^2))/((x^2)-86)))^(1/2));
	A = (((n0^2)+2)^2);
	B = (((n0^2)-1)^2);
	y = ((5*A*B*g*s)/((6*2,997E8)*(1,054E-27)*(1,8384E16)*(1,0932E23)*(n0^2)));

Plot	CaLiBo 1
g	0.85628 ± 0.03828
s	2 ± 0
Reduced Chi-Sqr	9.18085E-41
R-Square(COD)	-0.08566
Adj. R-Square	-0.08566

Model	BGO_CaLiBo2 (User)

Equation	n0 = ((2,5570+((0,0949*(x^2))/((x^2)-0,0934))+((1,2693*(x^2))/((x^2)-100)))^(1/2));
	A = (((n0^2)+2)^2);
	B = (((n0^2)-1)^2);
	y = ((5*A*B*g*s)/((6*2,997E8)*(1,054E-27)*(1,8805E16)*(1,1658E23)*(n0^2)));

Plot	CaLiBo 2
g	0.8675 ± 0.04766
s	2 ± 0
Reduced Chi-Sqr	1.45345E-40
R-Square(COD)	-0.05885
Adj. R-Square	-0.05885