Figure Captions:

Figure 1: SEM image of a 1 mol % Cr-doped sample surface after polishing and etching. The scale bar is 4 microns.

Figure 2: Grain sizes of Cr and Sb doped ceramics as functions of the doping level.

Figure 3: Curie temperatures (measured on heating) of Cr and Sb doped ceramics as functions of the doping level.

Figure 4: Dielectric constant (a) and loss (b) of Sb-doped ceramics at 1KHz and 33Hz.

Figure 5: Dielectric constant (a) and loss (b) of Cr-doped ceramics at 1KHz and 33Hz.

Figure 6: Pyroelectric coefficients of Cr and Sb-doped ceramics.

Figure 7: DC resistivities at 25˚C of Cr and Sb-doped ceramics.

Figure 8: Pyroelectric figures of merit F_V and F_D for Cr and Sb-doped ceramics. (Assuming that $c'=2.5\times10^6 Jm^{-3}K^{-1}$)

Figure 9: $\log_e$(DC Resistivity) vs 1/T for the Sb-doped ceramics. The legend indicates the doping level for each specimen in at %.

Figure 10: Variation of loge(DC conductivity) with $z^{-1/3}$ for Cr-doped ceramics.

Figure 11: $\log_e$(DC Resistivity) vs 1/T for the Cr-doped ceramics. The legend indicates the doping level for each specimen in at %.

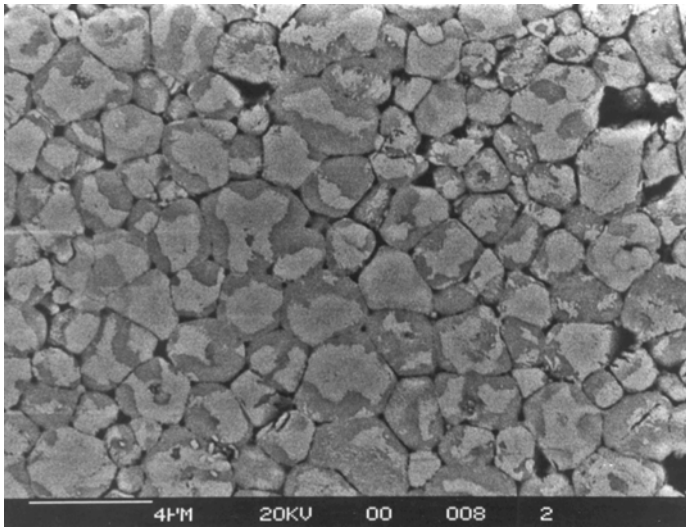


Figure 1

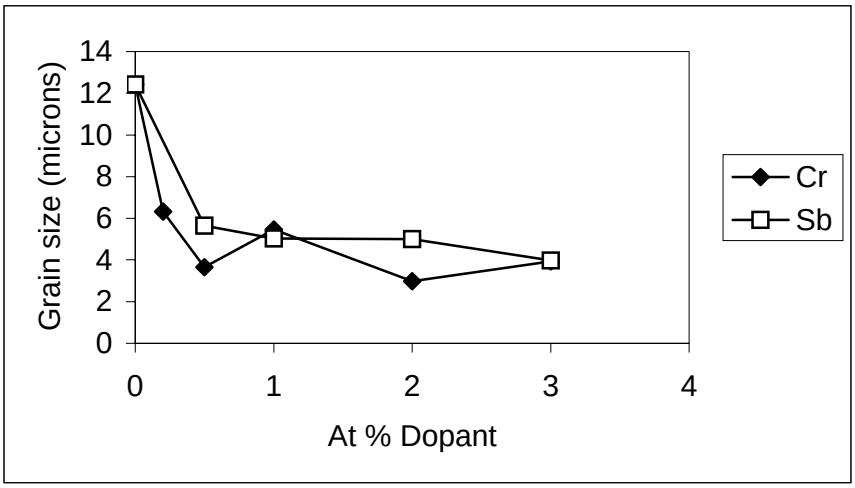


Figure 2

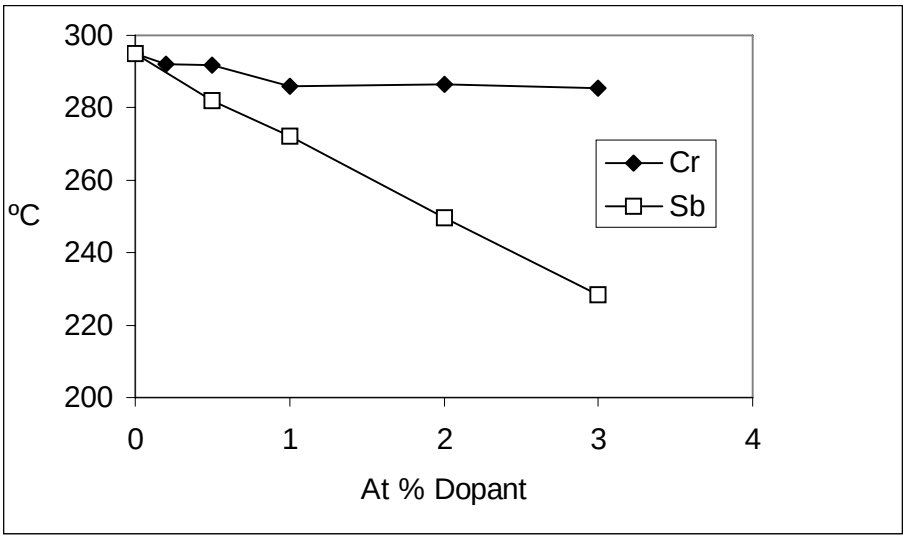


Figure 3

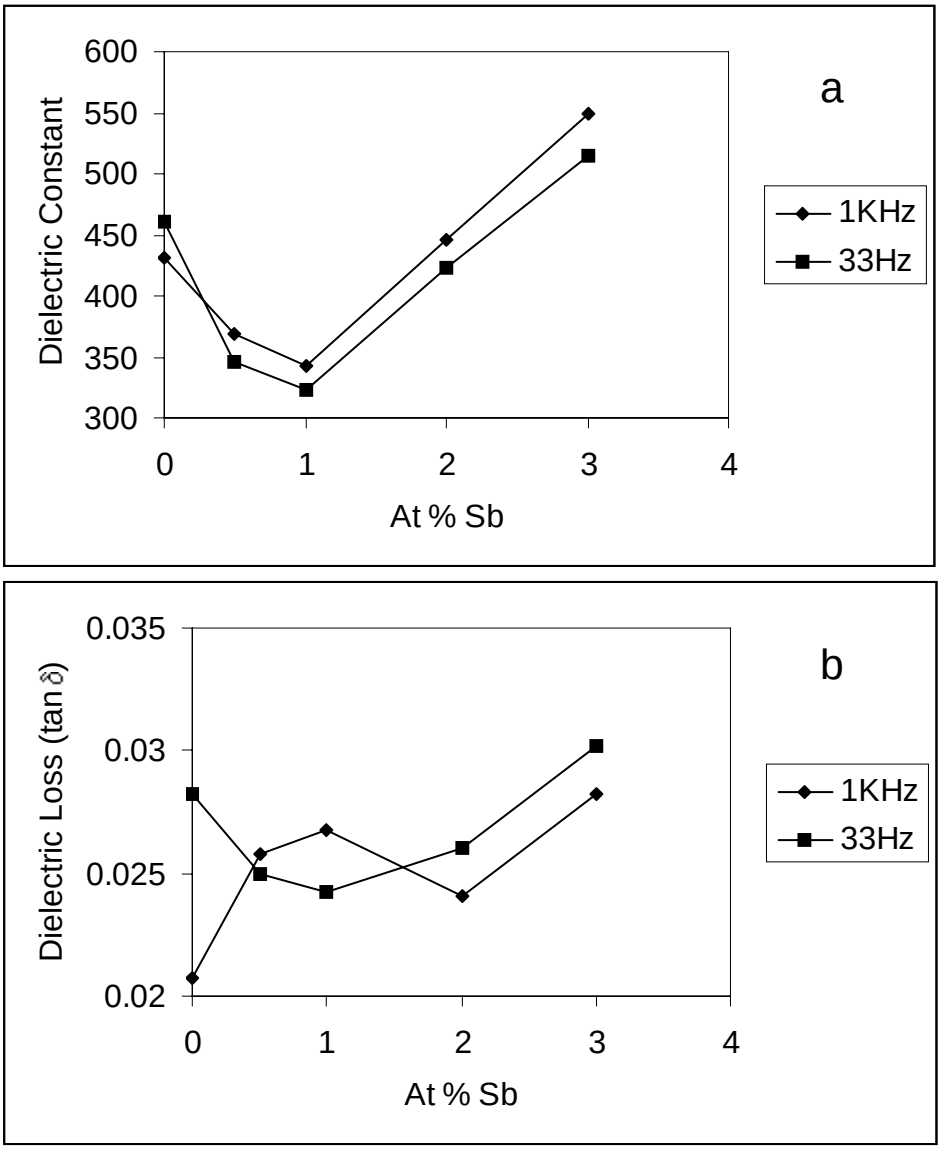
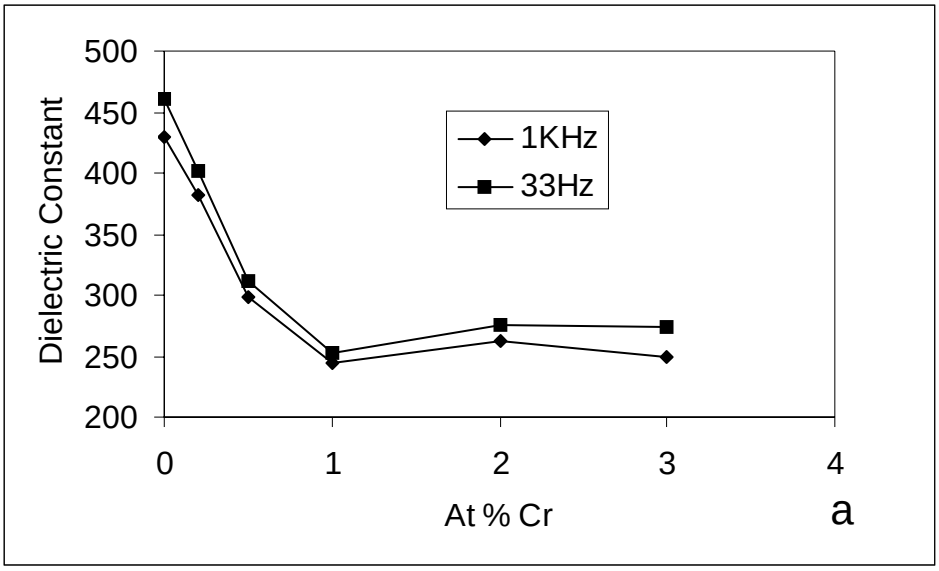

a
Dielectric Constant
600
550
500
450
400
350
300
0
1
2
3
4
At % Sb
1KHz
33Hz
b
Dielectric Loss (tan δ)
0.035
0.03
0.025
0.02
0
1
2
3
4
At % Sb
1KHz
33Hz

Figure 4


500
450
400
350
300
250
200
Dielectric Constant
1KHz
33Hz
0
1
2
3
4
At % Cr
a

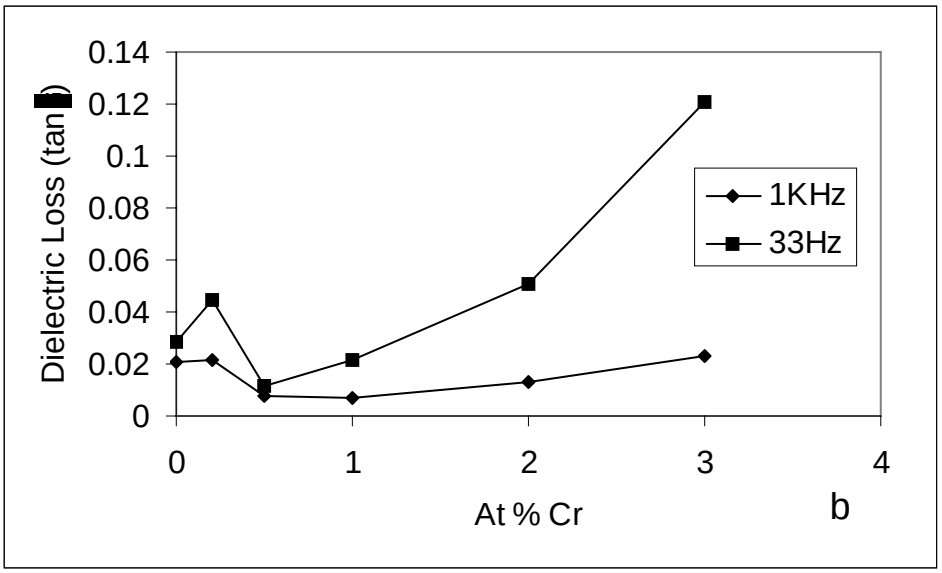

0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Dielectric Loss (tan)
1KHz
33Hz
0
1
2
3
4
At % Cr
b

Figure 5

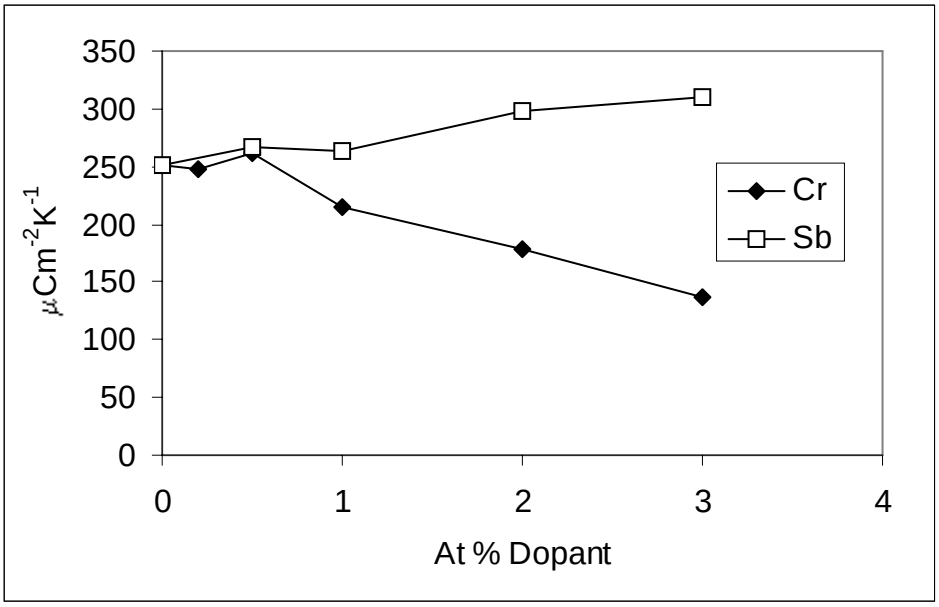


Figure 6

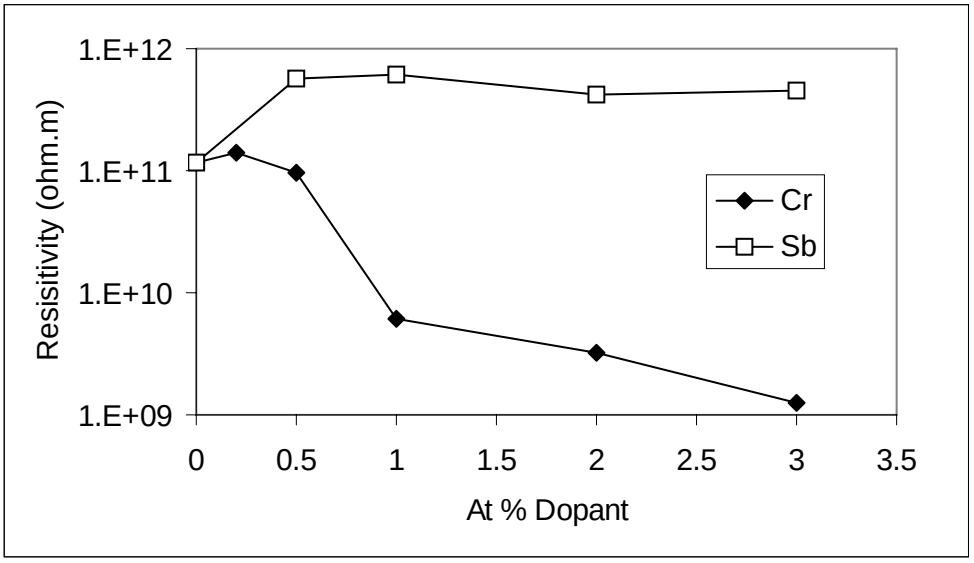
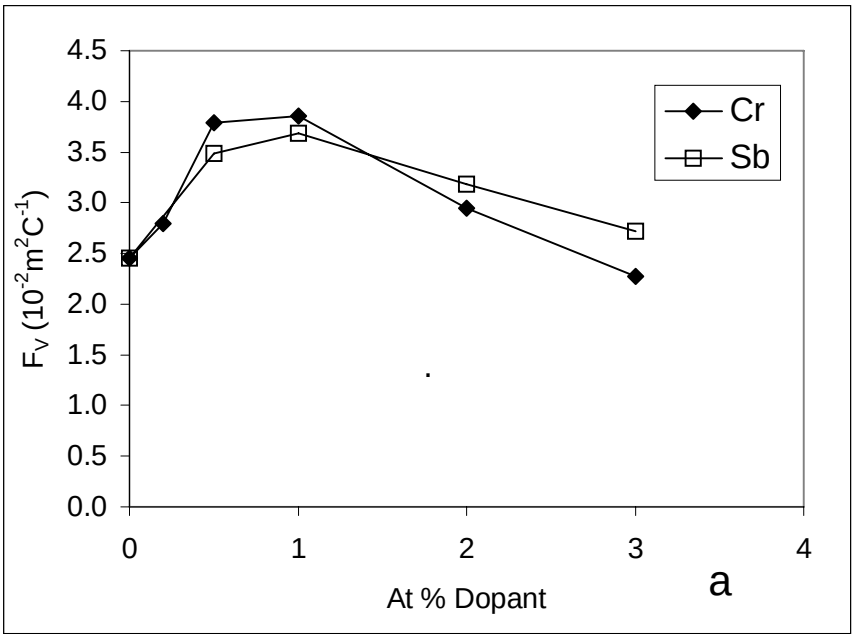


Figure 7


4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
1
2
3
4
Cr
Sb
F_V ($10^{-2}m^2C^{-1}$)
At % Dopant
a

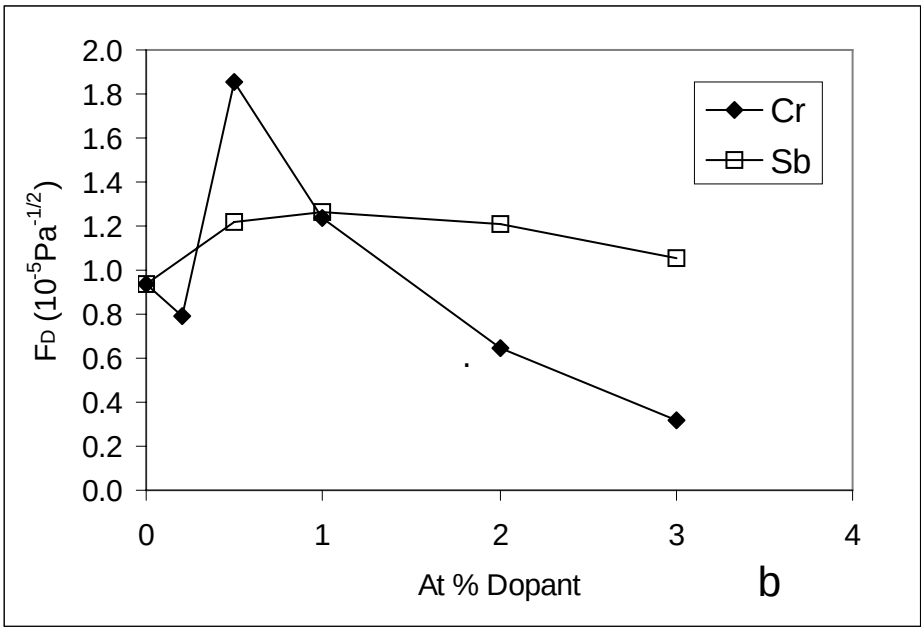

2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
1
2
3
4
Cr
Sb
F_D ($10^{-5}Pa^{-1/2}$)
At % Dopant
b

Figure 8

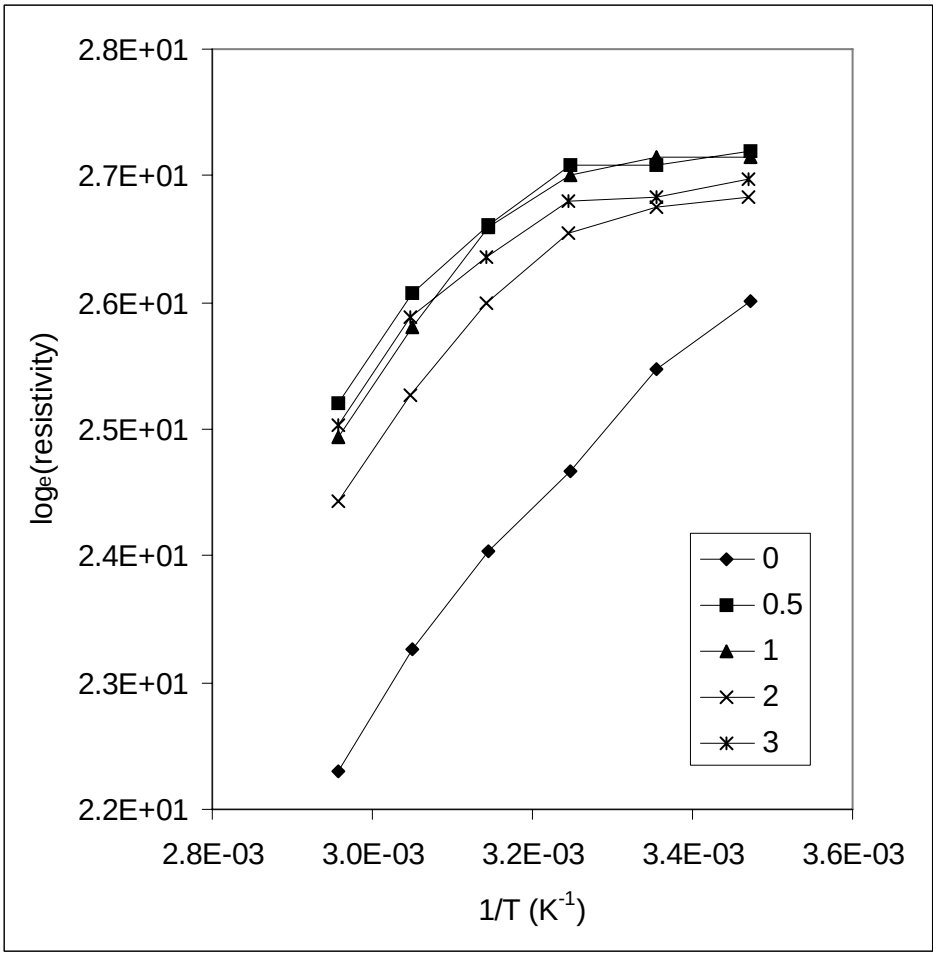

2.8E+01
2.7E+01
2.6E+01
2.5E+01
2.4E+01
2.3E+01
2.2E+01
loge(resistivity)
2.8E-03
3.0E-03
3.2E-03
3.4E-03
3.6E-03
1/T (K-1)
0
0.5
1
2
3

Figure 9

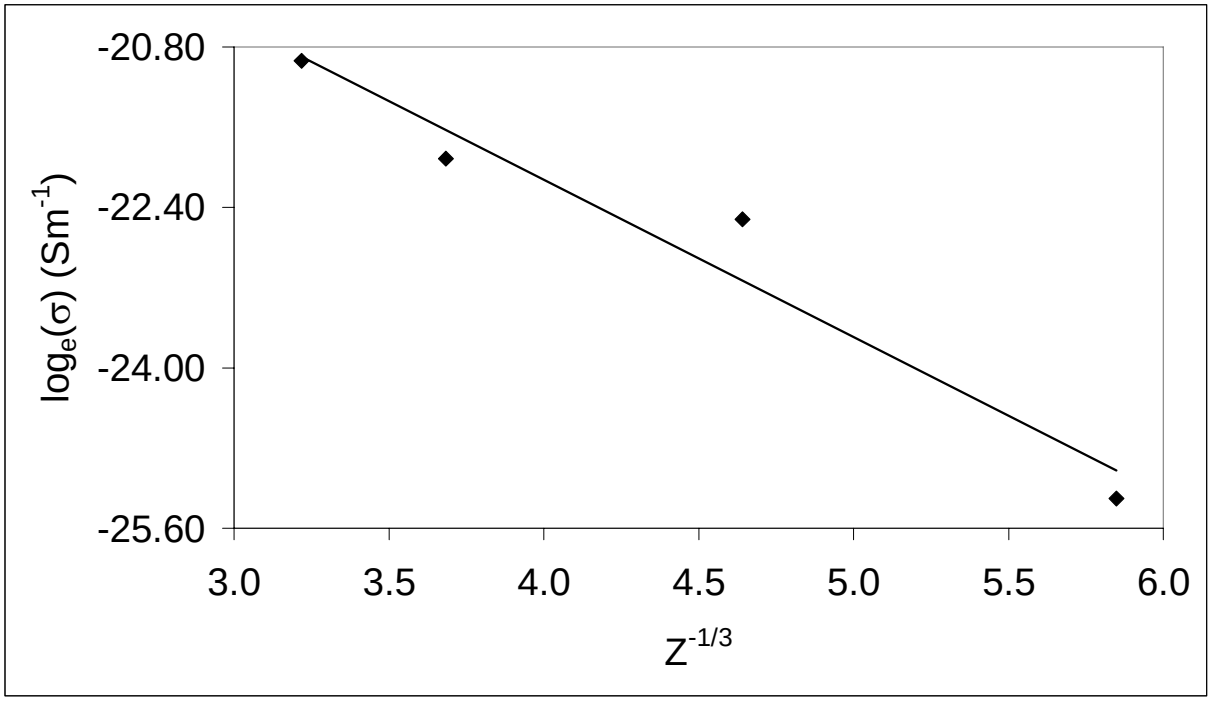


Figure 10

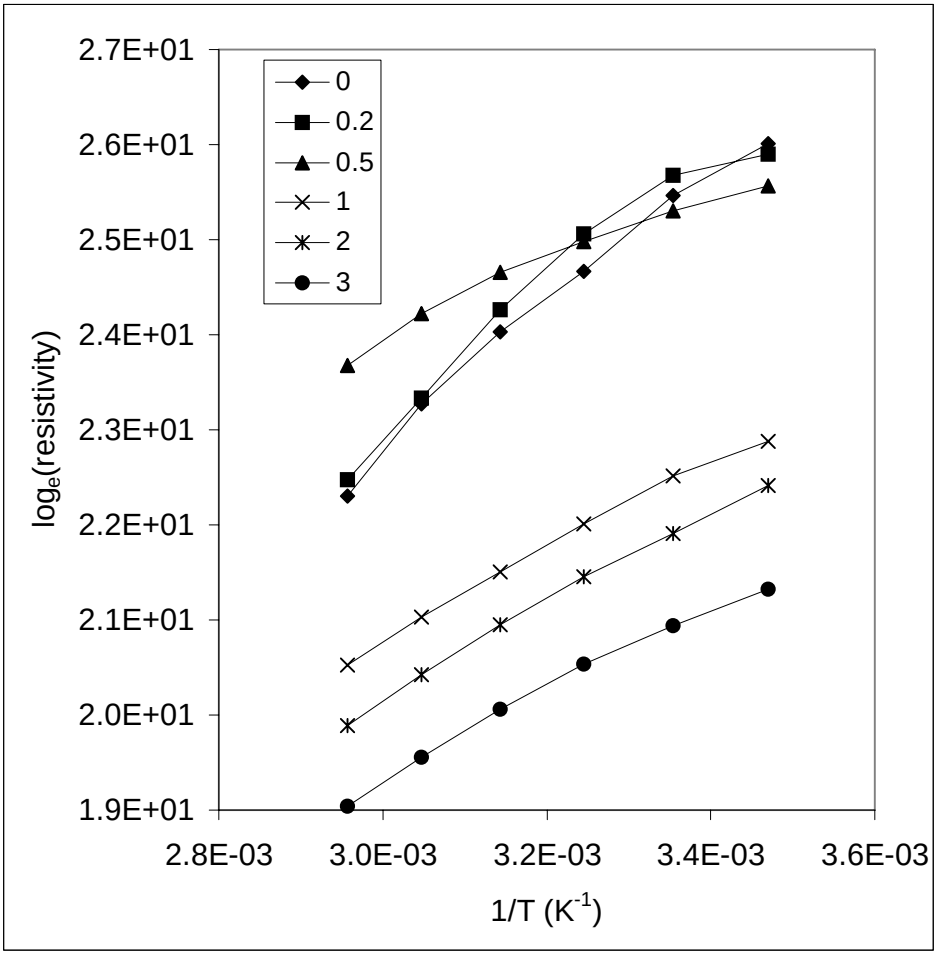

2.7E+01
2.6E+01
2.5E+01
2.4E+01
2.3E+01
2.2E+01
2.1E+01
2.0E+01
1.9E+01
log$_e$(resistivity)
0
0.2
0.5
1
2
3
2.8E-03
3.0E-03
3.2E-03
3.4E-03
3.6E-03
1/T (K^{-1})

Figure 11



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Electrical properties of Sb and Cr-doped PbZrO3-PbTiO3-PbMg1/3Nb2/3O3 ceramics

Whatmore, Roger W.; Molter, O.; Shaw, Christopher P.

2003-04
Elsevier
http://hdl.handle.net/1826/1000
R. W. Whatmore, O. Molter and C. P. Shaw, Electrical properties of Sb and Cr-doped PbZrO3-PbTiO3-PbMg1/3Nb2/3O3 ceramics, Journal of the European Ceramic Society, Volume 23, Issue 5, , April 2003, Pages 721-728.

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