**SUPPLEMENTARY INFORMATION**

**Structural and electrical properties of Zr-doped K0.48Na0.52NbO3 ceramics: “hard” lead-free piezoelectric**

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*Impedance measurement*



**(a)**



x=0.005 759ºC



**(b)**

x=0.015 765ºC

**Fig. S1**. Impedance complex plane plots, Z\*, for x = 0.005 (a) and x = 0.015 (b) samples at 759 and 765 ºC, respectively.



1.5

1.8

**(b)**  x=0.005 759ºC

1.2

0.9

0.6

0.3

0



0

0.3

0.6

0.9

1.2

1.5

**(a)** x =0 743ºC



2.5

3.0

1.5

1.0

0.5

0

2.0

**(d)**  x=0.03 756ºC



2.0

1.2

0.8

0.4

0

1.6

**(c)**  x=0.015 765ºC

**Fig. S2**. Z”/M” spectroscopic plots for x = 0 (a), x = 0.005 (b), x = 0.015 (c) and x = 0.03 (d) samples at 743, 759, 765 and 756 ºC, respectively.