

Impedance Analysis of Resistance Anomaly of BaTiO₃ based PTC thermistor

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Abstract : The effect of Re-oxidation on the PTCR properties of Sm-doped barium titanate ceramics was investigated by means of impedance spectroscopy. Electrical properties such as resistance vs. temperature, I-V curve were measured and microstructure was observed with SEM photography. Sample was fabricated with thick film process such as tape casting of green sheet, screen printing of electrode pattern, stacking, firing in reduced atmosphere and re-oxidation, etc. As the temperature of re-oxidation increases, resistance jump as a function of temperature enhances but resistance at room temperature increases. These behavior of resistance as a function of temperature, dependent on the re-oxidation condition, is analyzed with Cole-Cole impedance plot and is shown to be related with the degree of oxidation of grain boundary regardless of grain core during re-oxidation process of sample.