



Contribution ID: 331

Type: **Poster**

## Giant Dielectric in Sb-Single Doped Rutile-TiO<sub>2</sub> Ceramics

*Thursday, 25 May 2017 17:45 (15 minutes)*

Sb-single doped rutile-TiO<sub>2</sub> (STO) ceramics were prepared by a conventional mixed oxide method. The high-dielectric performance with giant dielectric constant value ( $\epsilon' \approx 10^4$ ) with low dielectric loss ( $\tan \delta < 0.05$ ) of STO ceramics over a wide temperature range were obtained. Scanning electron microscope coupled with energy-dispersive X-ray analysis (EDX) and X-ray diffraction technique were used to characterize the microstructure and crystal structure, respectively. The existence of Ti<sup>3+</sup> was confirmed using X-ray photoelectron (XPS) technique. X-ray absorption near edge structure (XANES) technique were also carried out. The origin of the observed high-dielectric performance in STO ceramics was investigated.

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**Session Classification:** Poster Presentation II

**Track Classification:** Material Physics and Functional Materials