

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Influence of Cation Vacancies on Structural and Dielectric Properties of Pr-modified $\text{SrBi}_2\text{Ta}_2\text{O}_9$ JORGE MATA*, ALEJANDRO DURAN, EDUARDO MARTINEZ, JESUS SIQUEIROS, Centro de Ciencias de la Materia Condensada, Universidad Nacional Autonoma de Mexico — Dielectric and ferroelectric properties were studied in $\text{Sr}_{0.85-y}\text{Pr}_{0.15}\text{V}_y\text{Bi}_2\text{Ti}_2\text{O}_9$ polycrystalline samples where cation vacancies were induced. DRX characterization shows that the Aurivillius structure can accept only 10% of induced vacancies without precipitation of second phases in $A2_1am$ space group. The replacement induces change in the crystal structure and as consequence dielectric properties are affected. Thermoelectric analysis and ferroelectric hysteresis measurements show that the vacancies modify the transition temperature T_c and slightly the polarization values. From the ε -T curves it was observed that the polarization magnitude and T_c are affected as a consequence of the induced vacancies. A broad peak at T_c , typical of the diffuse phase transition behavior of this material was also observed. Furthermore, the induced vacancies in praseodymium-modified SBT produce an increased on T_c from ~ 180 to ~ 240 °C, these facts show that induced vacancies in the structure are a tuning mechanism for the dielectric and ferroelectric properties. Thanks to DGAPA-UNAM and CONACYT for funds through Proj. No. 40604-F, 47714-F, IN116703, IN100903 and to J. Peralta & P. Casillas.

Jorge Mata
Centro de Ciencias de la Materia Condensada, Universidad Nacional Autonoma de Mexico

Date submitted: 03 Dec 2006

Electronic form version 1.4