

Phase Transitions in Inorganic Ferroelectric and Piezoelectric Crystals by a Controlled Heating System

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An experimental system has been developed to measure capacitance as a function of temperature (CT) within a temperature range of 23.0 Degrees Celsius to 200 Degrees Celsius. This CT characterization system represents one high-temperature-part of a composite system intended to measure CT curves above and below room temperature. The identification of nonlinear elements in CT curves is an important indicator in the characterization of piezoelectric and ferroelectric materials often referred to as nonlinear. Examples of well-known nonlinear ferroelectric materials are barium titanium oxide, **BaO_3Ti** (BTO) and triglycine sulfate, **$C_6H_{17}N_3O_{10}S$** (TGS)[1,2,3,6]. The primary goal of this work is to obtain CT data for novel nonlinear materials such as bis(diisopropylammonium) cobalt (II) tetrachloride. For testing and characterization of this system BTO and TGS were used. CT data for BTO and its nonlinear nature and transition temperature is presented and compared to previous results [1,6].