**To Study Structural and Dielectric Properties of Pristine and Ca Doped BaTiO3**

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**Abstract:** In this report, we study synthesis and characterization of pristine and Ca doped BaTiO3. The perovskite type pristine and Ca doped BaTiO3 compound via Solid State technique. We have carried out X-ray Diffraction technique for identifying crystal structure. We were further studied Dielectric properties as a function of frequency at room temperature. The XRD spectrum reveals that the pristine BaTiO3 possess single phase Cubic Structure without impurity peaks while Ca doped BaTiO3 compound acquire Cubic structure with some impurity peaks due to CaCO3. The Dielectric analysis as a function of frequency reveals that both the samples show good dielectric properties. The depressed semicircles in impedance show that the compounds possess non-Debye Character.

Keyword: Perovskite, X-ray Diffraction Technique, Solid State Reaction, Dielectric Properties.