

LOW TEMPERATURE SINTERING OF BaTiO₃ WITH THE AID OF FLUORIDE OR OXYFLUORIDE EUTECTICS

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Previous studies have shown LiF to allow the sintering of BaTiO₃ at low temperature. In the present work fluoride or oxyfluoride eutectics are used as additive mixture to stoichiometric BaTiO₃: SrF₂, 4 LiF ($t_m = 761^\circ\text{C}$) ; BaF₂, 4 LiF ($t_m = 765^\circ\text{C}$) ; Li₂CO₃, LiF ($t_m = 608^\circ\text{C}$) ; (4 LiOH, H₂O), LiF ($t_m = 430^\circ\text{C}$). The ceramics are heated 2 hours at either 850 or 930°C. Each sample is a perovskite single phase. The shrinkages are in the range 0.14 to 0.17. The Curie temperature decreases with the amount of fluorine in the additive composition. The permittivity at 293 K reaches 5800 for the departure composition 0.97 BaTiO₃ + 0.03 SrF₂ + 0.12 LiF, the corresponding value of the dissipation factor $\tan \delta$ is 0.004.