

Characterization of BST films for high tunable thin film capacitor

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Abstract : This is for the electrical characterization by IDC pattern using BST($\text{Ba}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$) thin film. bst materials had been chosen for high frequency applications due to it's high permittivity and tunability. The BST thin films have been deposited on Al_2O_3 Substrates by Nd-YAG pulsed laser deposition with a 355nm wavelength at 700 °C. The post deposition annealing at 750°C in flowing O_2 atmosphere for 1 hours. The capacitance of IDC patterns have been measured from 1 to 10 GHz as a function fo electric field (± 40 KV/cm) at room temperature using inter-digital Au electrodes deposited on top of BST. The IDC patterns have three type of fingers number. For the 10 pairs finger was the best capacitance onto Al_2O_3 substrate. The capacitance was 0.9pF. Also Dielectric constant was been 351 at 100 mTorr and annealing temperature 750°C for 1 hour. The loss tangent was been 0.00531.