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Evolution of multiple dielectric responses and relaxor-like behaviors in pure and nitrogen-ion-implanted (Ba, Sr)TiO_3 thin films JING YANG, YANHONG GAO, WEI BAI, YUANYUAN ZHANG, East China Normal University, HONG SHEN, JINGLAN SUN, XIANGJIAN MENG, Shanghai Institute of Technical Physics, CHUNGANG DUAN, XIAODONG TANG, JUNHAO CHU, East China Normal University, MENG XIANGJIAN TEAM, CHU JUNHAO TEAM — Multiple dielectric responses are comparatively investigated in the pure and nitrogen-ion-implanted (Ba, Sr)TiO_3 (BST) films. Larger diffusive degree of phase transition and more relaxor-like features than those of pure BST films are observed in implanted ones, where the long-range-dipolar-correlated-orders were further segregated into local polar orders after the implantation. Moreover, the implanted films possess a transition from local reorientations of groups of dipoles induced nearly-constant-loss (NCL) type to oxygen vacancies (V_o) hopping type conduction at high temperature. Whereas, pure films behave as NCL type conduction along with a dielectric relaxation, which arises from the motions of defect complexes V_o^{2+}-Ti^{3+}.

Jing Yang
East China Normal University

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