

Flash Lamp Annealing of Ferroelectric Films

Crystallization and sintering of ferroelectric oxides on non-conventional substrates enables flexible and/or transparent electromechanical devices. However, due to the mismatch between the processing temperatures of these oxides and the maximum thermal stability of the target substrates, such integration remains challenging.

Flash lamp annealing (FLA), where the film is selectively heated by high-intensity light while the substrate remains comparatively cold, offers a promising pathway for direct processing. It enables the annealing of large areas in a single exposure and its typical pulse length is in the order of millisecond or below.

We will demonstrate that perovskite lead zirconate titanate (PZT) thin films with thicknesses up to 1 μm can be crystallized and sintered directly from the amorphous phase on glass using FLA, achieving piezoelectric coefficients e_{33} of 5 C m^{-2} . We further show that FLA enables the growth of PZT films on a wide variety of glass substrates, ranging from fused silica and soda-lime glass to modern flexible glasses such as Corning® Willow® Glass.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

No interest

Invitation letter for visa

No

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