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## Electrical Transfer Function and Poling Mechanisms for Nonlinear Optical Polymer Modulators

By National Aeronautics and Space Administration (NASA)

Biblioscholar Mrz 2013, 2013. Taschenbuch. Book Condition: Neu. 246x189x16 mm. This item is printed on demand - Print on Demand Neuware - Electro-Optic Polymers hold great promise in increased electro-optic coefficients as compared to their inorganic corollaries. Many researchers have focused on quantum chemistry to describe how the dipoles respond to temperature and electric fields. Much work has also been done for single layer films to confirm these results. For optical applications, waveguide structures are utilized to guide the optical waves in 3 layer stacks. Electrode poling is the only practical poling method for these structures. This research takes an electrical engineering approach to develop poling models and electrical and optical transfer functions of the waveguide structure. The key aspect of the poling model is the large boundary charge density deposited during the poling process. The boundary charge density also has a large effect on the electrical transfer function which is used to explain the transient response of the system. These models are experimentally verified. Exploratory experiment design is used to study poling parameters including time, temperature, and voltage. These studies verify the poling conditions for CLDX/APC and CLDZ/APEC guest host electro optic polymer films in waveguide stacks predicted by...



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