

EFFECT OF CORONA POLING PARAMETERS ON POLYMER FILM POLING EFFICIENCY

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The growth of internet traffic demand and the development of communication technologies have greatly increased the interest in organic nonlinear optical (**NLO**) materials for applications as electro – optical (**EO**) active components. If such organic materials were to be used in EO devices they must possess NLO properties. These properties can be obtained by poling the material in an external electric field. One of the most popular methods for polymer poling is via corona discharge. We have used a corona triode device for polymer poling which allows one to control and monitor poling parameters such as poling temperature, grid voltage, corona voltage etc.

By varying these parameters we wanted to achieve the highest possible order parameters maintaining the structure and stability of the polymer material. We have noticed that if the poling temperature is close enough to material glass transition temperature then formation of pores occur in polymer film. The light that passes through the film gets scattered due to such irregularities and the total nonlinearity of the polymer film decreases. A preheating procedure applied to the film before the poling significantly reduces the pore formation and increases the overall nonlinearity of the film. In this report the reason for pore formation in a PMMA+DMABI 10 wt% host guest thin film will be explained and the effect of prepoling procedure will be presented.

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