Abstract Submitted
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Thin-film fabrication and electric field induced poling of an azo dye-doped cyclic olefin copolymer[1] JONATHAN CHOI, The College of New Jersey, BASTIAN BRAEUER, Beuth University of Applied Sciences, PADMA GOPALAN, University of Wisconsin-Madison, DAVID MCGEE, The College of New Jersey — Cyclic olefin copolymers (COC) exhibit high transparency, low birefringence, and a high glass transition temperature, which make them promising as host materials for nonlinear optical chromophores. However, the non-polar COC environment limits chromophore loading, resulting in potentially weak nonlinear optical functionality. In this research, we fabricated COC films doped with the azo dye Disperse Red 1 (DR1), and corona poled the films to establish dipolar chromophore order. Second-harmonic generation experiments were used to probe chromophore orientational order during the poling process and to monitor the subsequent temporal relaxation. Preliminary experiments indicated a maximum loading of 5 wt% DR1 in COC, and that the effective second order nonlinear optical coefficient decayed by 50% within two weeks following poling.

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