

Abstract Submitted
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Molecular orientation in self-assembled azo-polymer thin films studied by second-harmonic generation¹ PAULO B. MIRANDA, FABIO J. S. LOPES, CLEBER R. MENDONCA, SERGIO C. ZILIO, IFSC - University of Sao Paulo, Brazil — Ultrathin films of polymers containing azo chromophores are important for many photonic applications. We have used optical second-harmonic generation (SHG) to study the molecular orientation of azo-polymer films prepared by Layer-by-Layer self-assembly onto a glass substrate. The SHG signal is proportional to the second-order nonlinear susceptibility of the film, which in turn depends on the orientational distribution of the azo chromophores in the film. Analyzing the SHG signal as a function of the input and output light polarizations, a few parameters of this orientational distribution can be deduced. The results indicate that there is a preferential orientation of the azo chromophores in the film, leading to a significant optical nonlinearity. The films were found to be anisotropic and inhomogeneous on the surface plane due to the self-assembly procedure used for their fabrication. Such detailed structural characterization is important for understanding and optimizing the self-assembly technique to yield samples with the desired microscopic arrangement.

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