

Abstract Submitted
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Sum-Frequency Vibrational Spectroscopy on Rubbed Poly(vinyl cinnamate) films for Liquid Crystal Alignment.. PASQUALE PAGLIUSI, University of Calabria, ERIC C.Y. CHEN, University of California at Berkeley, Y. R. SHEN, University of California at Berkeley — Rubbing or uv-irradiation of poly(vinyl cinnamate) (PVCi)-coated substrates can effectively align liquid crystal (LC) films deposited on them. We report here the use of surface-specific sum-frequency vibrational spectroscopy (SFVS) to investigate how rubbing affects the interfacial molecular structure of PVCi. The stretch modes of the pendant side-chain phenyl groups dominate the spectra, from which the average orientation of the phenyl groups is deduced. The results show that rubbing aligns the main chains of PVCi along the rubbing direction. While hard rubbing also aligns the phenyl rings toward the rubbing direction, soft rubbing preferentially aligns them perpendicular to the rubbing direction. The observations are correlated with the fact that hard-rubbed substrates induce LC alignment along the rubbing direction, and soft-rubbed substrates induce LC alignment perpendicular to the rubbing direction. This work was supported by NSF.

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