

Abstract Submitted
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NEXAFS measurements of chain alignment in order polyfluorene thin films¹ XIAOSONG LIU, HYEUNSEOK CHEUN, University of Wisconsin, FRANK GALBRECHT, University of Wuppertal, F. J. HIMPSEL, University of Wisconsin, ULLRICH SCHERF, University of Wuppertal, MICHAEL WINOKUR, University of Wisconsin — Carbon K-edge near edge X-ray absorption fine structure (NEXAFS) has been used to characterize the uniaxial surface chain alignment within the top surface (2-3 nm) of poly[bis(2-ethyl)hexylfluorene] thin films spin-cast atop rubbed polyimide templating substrates before and after thermal annealing. The film thicknesses range from approximately 25 to 130 nm. In the thinnest films appreciable chain alignment extends through to the top surface prior to annealing. Thermal annealing produces comparatively high levels of surface chain alignment in all film thicknesses despite a drop in the dichroic ratios, as measured by polarized optical absorption spectroscopy, in the thickest films. These data support a model that exhibits a graded morphology in which the top and bottom surfaces exhibit planar, uniaxial alignment while the film interior is less well aligned and includes a proportion of homeotropic alignment.

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