Electronic Supplementary Information (ESI)

"Characteristic Smectic Structures of Main-Chain Liquid-Crystalline Polyimides Driven by a Microphase Separation between Aromatic Imide Mesogen and a Dimethyl Siloxane Spacer"

Ryohei Ishige, Yu Shoji, Tomoya Higashihara, Mitsuru Ueda, and Junji Watanabe*

Department of Organic and Polymeric Materials, Graduate School of Science and Engineering, Tokyo Institute of Technology, 2-12-1-H-132, O-okayama, Meguro-Ku, Tokyo, 152-8552, Japan

E-mail address: rishige@polymer.titech.ac.jp

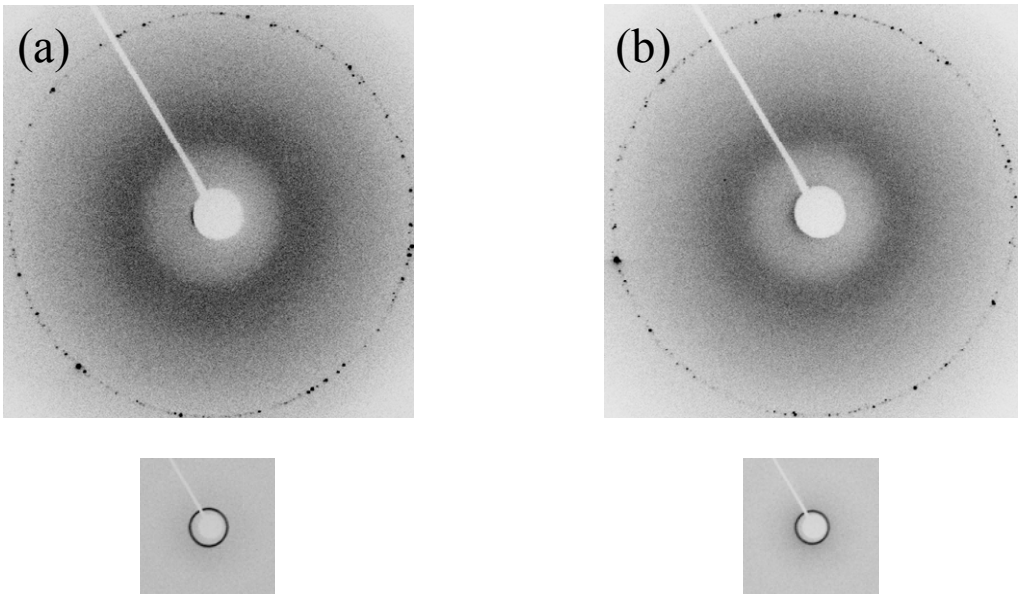
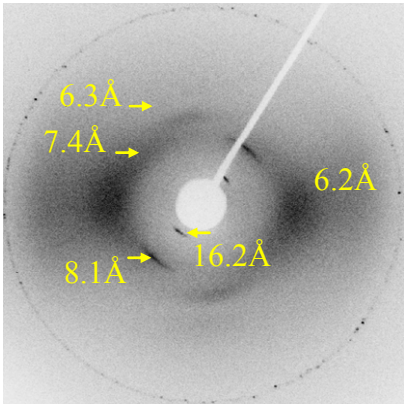


Figure S1. (a) The WAXD powder pattern observed at 170 °C in the S_C phase region and (b) observed at 230 °C in the S_A phase region. The photographs for the Debye-Scherrer ring of the inner sharp reflection are shown below those in wide angle region. The spacing of inner layer reflection was 31.1 Å at 170 ºC and 35.7 Å at 230 ºC, respectively. These values are absolutely same as those observed for the fiber specimen.

(a)



(b)

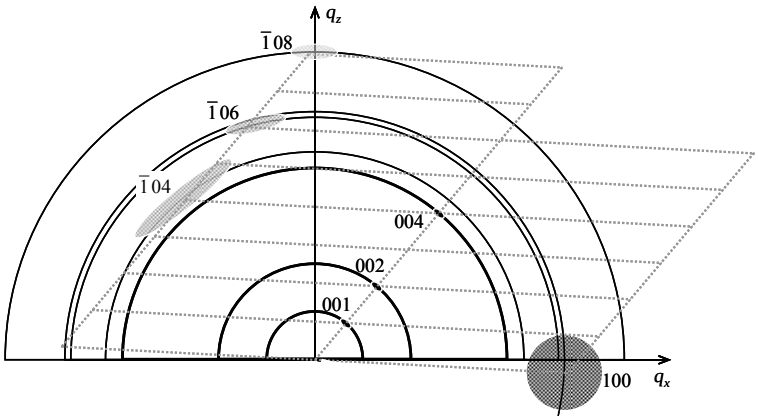


Figure S2. (a) The monodomain-like WAXD pattern for the S_C phase in the oriented film sample of BPDA/4SiO3-3Cl and (b) the two-dimensional reciprocal lattice satisfying the reflection positions.

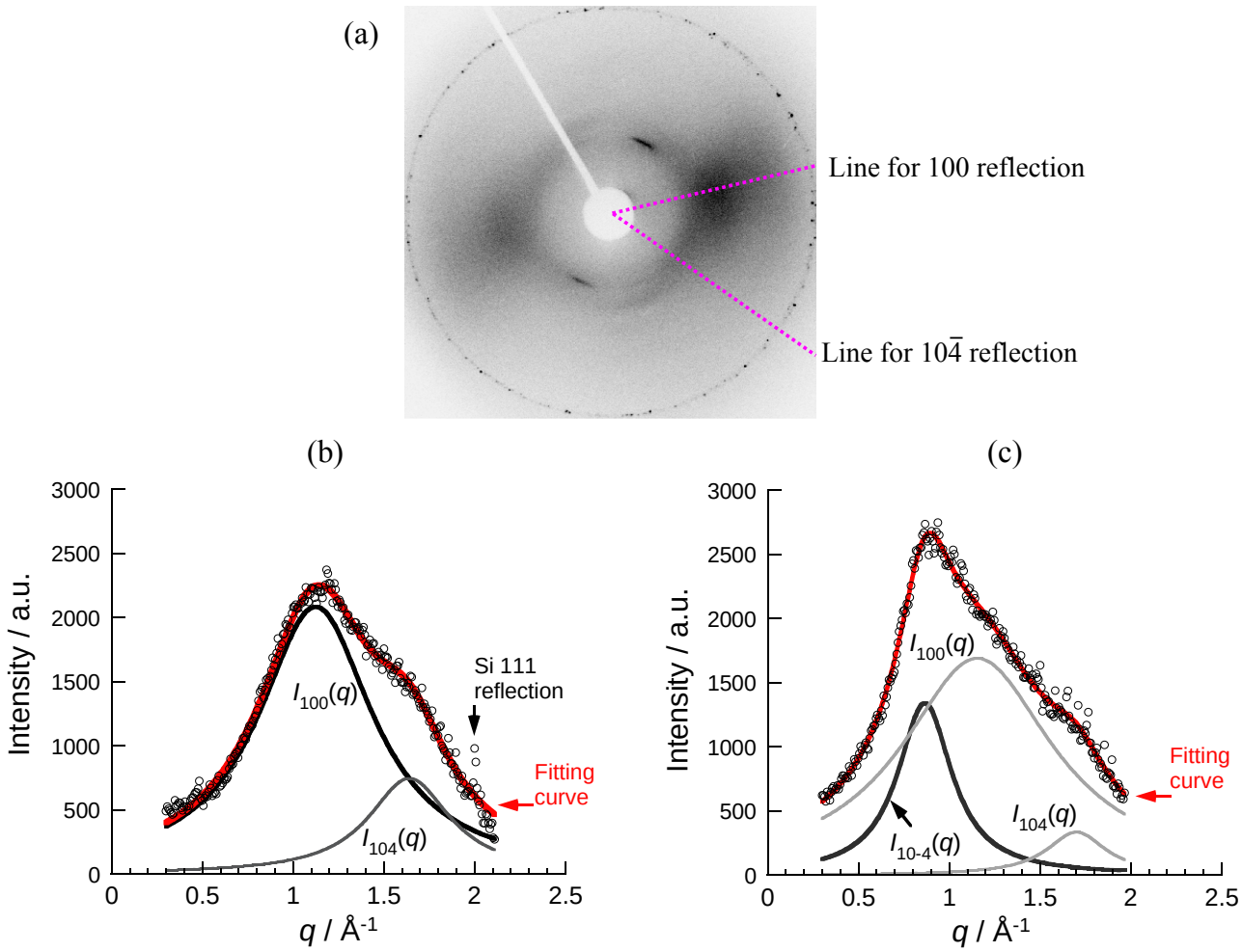


Figure S3. (a) The WAXD patterns of the monodomain-like films in the S_C phase. The line intensity profiles for the 100 and $10\bar{4}$ reflections are obtained on the pink dotted lines on the WAXD pattern. The profiles with fitting curves (red solid line) for the 100 (b) and $10\bar{4}$ (c) reflections are shown below the photograph. The profiles were fitted with sum of several Lorentz type functions because a broad reflection (most likely 104 reflection) was overlapped on the 100 reflection, and 100 and the broad reflection (104 reflection) were overlapped on the $10\bar{4}$ reflection, respectively. The instrumental broadening of x-ray beam was neglected for the estimation of ξ, because the broadening estimated from the Si 111 reflection was too narrow compared with the width of those broad reflection and did not affect on the value of ξ.