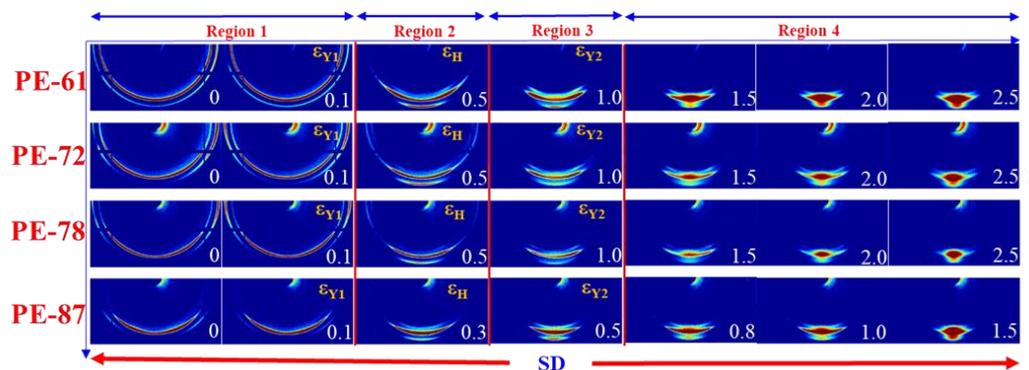
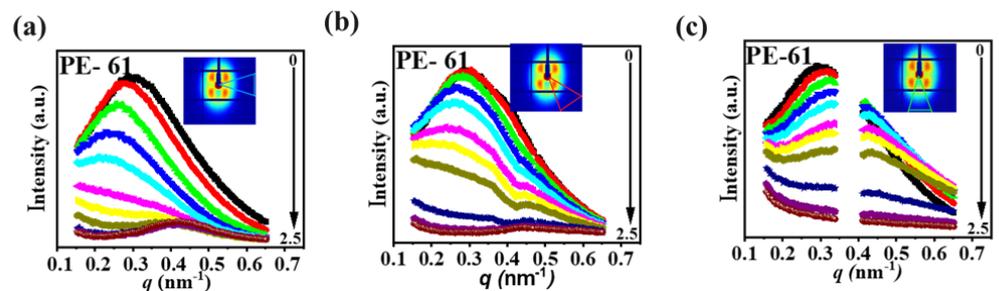


# Supplementary Materials: Microstructural Origin of the Double Yield Points of the Metallocene Linear Low-Density Polyethylene (mLLDPE) Precursor Film under Uniaxial Tensile Deformation

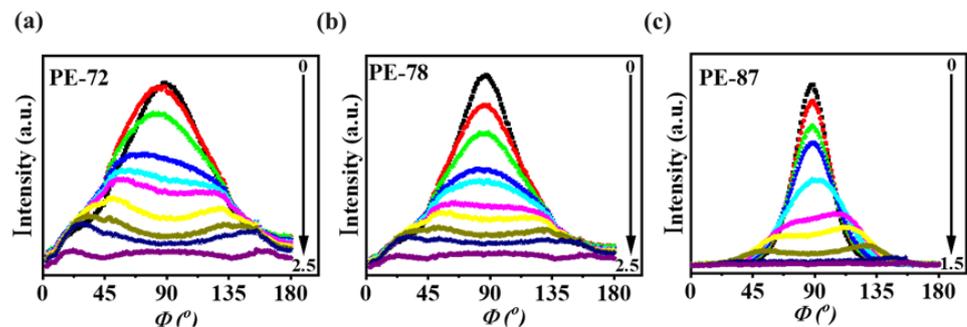
Obaid Iqbal, Jean Claude Habumugisha, Shengyao Feng, Yuanfei Lin, Wei Chen, Wancheng Yu and Liangbin Li



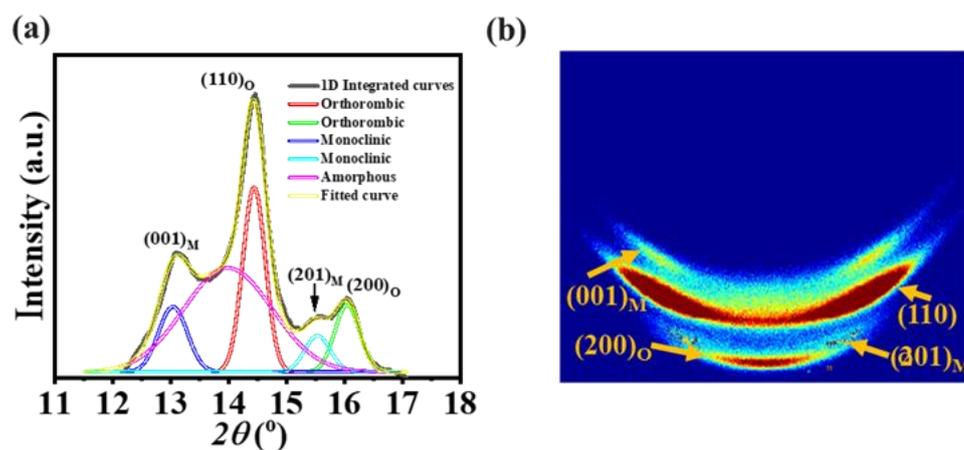
**Figure S1.** 2D WAXS patterns for samples with different orientations during uniaxial tensile deformation



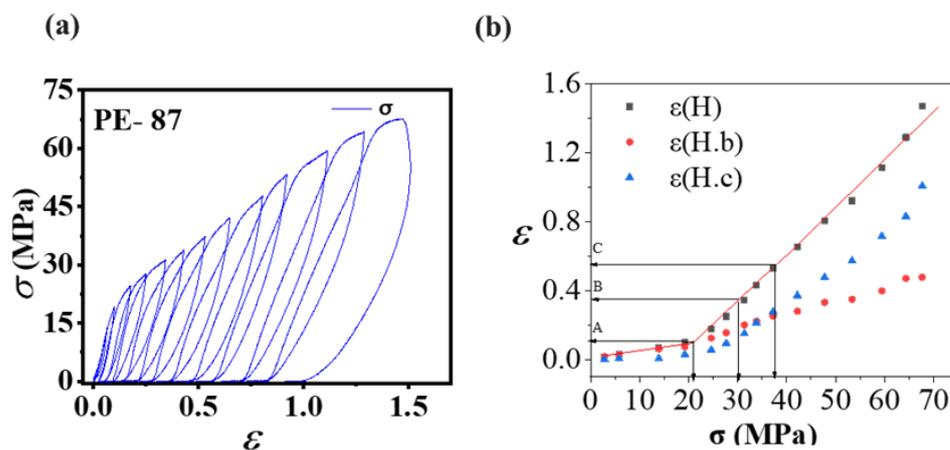
**Figure S2.** Representative 1D SAXS intensity profiles along the (a) meridian direction, (b) diagonal direction, and (c) equatorial direction Section S3: Morphological characteristics of filter webs.



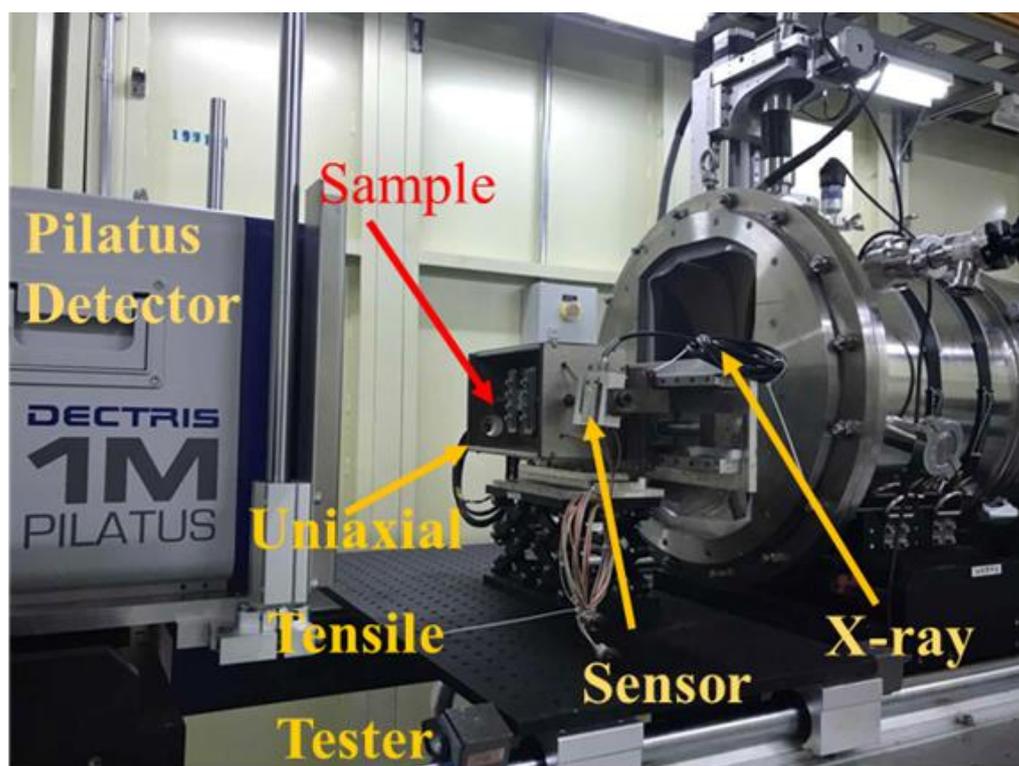
**Figure S3.** Azimuthal integrations for PE-72, PE-78, and PE-87 with the increasing strain



**Figure S4.** (a) Example of the multiple-peak fit of the 1D integrated WAXS intensity curve with Gaussian functions to represent the amorphous, orthorhombic, and monoclinic crystal phases. (b) Representative 2D WAXS pattern marks the detailed orthorhombic crystal and monoclinic crystal lattice plane diffractions.



**Figure S5.** (a) Step-cyclic deformation stress–strain curves for PE-87; (b) reversible part  $\varepsilon(H.c)$  and irreversible part  $\varepsilon(H.b)$  of the total strain  $\varepsilon(H)$  as a function of the stress. The locations of the critical points A, B, and C are indicated



**Figure S6.** The experimental device setup for the WAXS measurement carried out at the beam-line BL19U2 in the Shanghai Synchrotron Radiation Facility (SSRF)