

Structure-regulated tough elastomer of liquid crystalline inorganic nanosheets/polyurethane nanocomposite

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Supporting Information 1

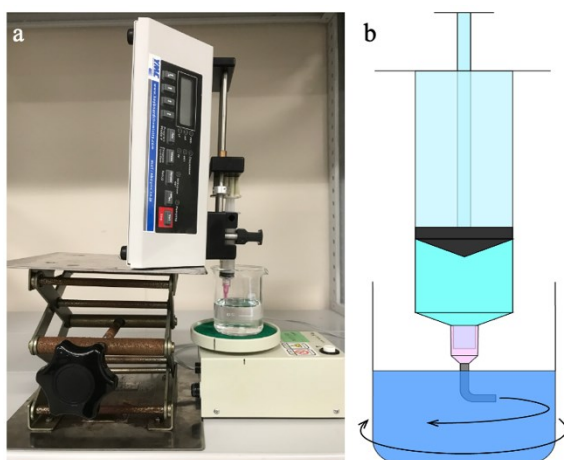


Figure S1. (a) Photograph and (b) schematic illustration of fiber synthesis device.

Supporting Information 2

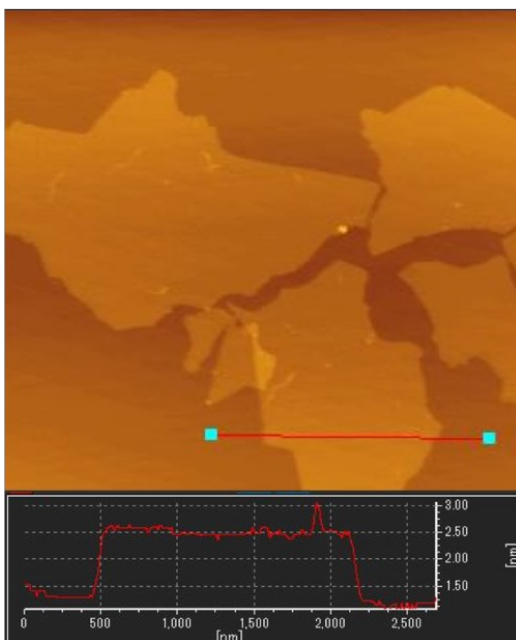


Figure S2. The AFM image of the FHT nanosheets. The nanosheets/water/DMF colloid was cast and dried on mica substrate for the observation. In the height profile of the AFM image, base height is ~ 1.3 nm and the nanosheet top height is 2.5 nm so that the thickness is evaluated as ~ 1.2 nm. Considering the crystallographic thickness of the clay nanosheets (1.0 nm) and the diameter of counter cation Na^+ (0.10 nm), this result confirms that nanosheet is single layer without stacking.

Supporting Information 3

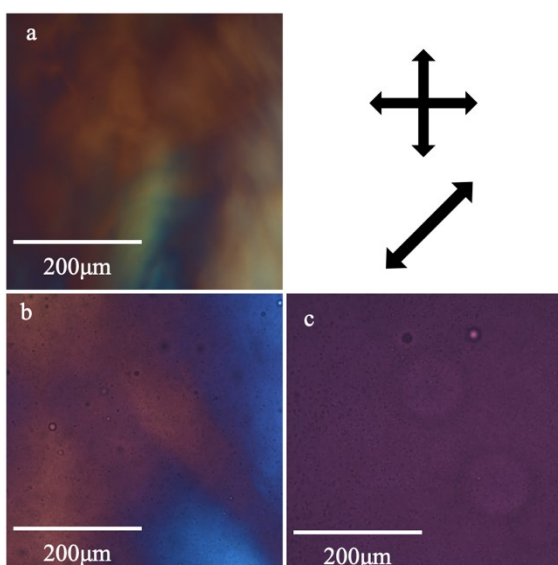


Figure S3. POM images of (a) nanosheet (4.44 wt%)/water/DMF colloid, (b) nanosheet (2.22 wt%)/prepolymer (21 wt%)/water/DMF colloidal solution, and (c) prepolymer (41.4 wt%)/DMF solution. Molar ratio of water to DMF in the colloids is 2:8.

Supporting Information 4

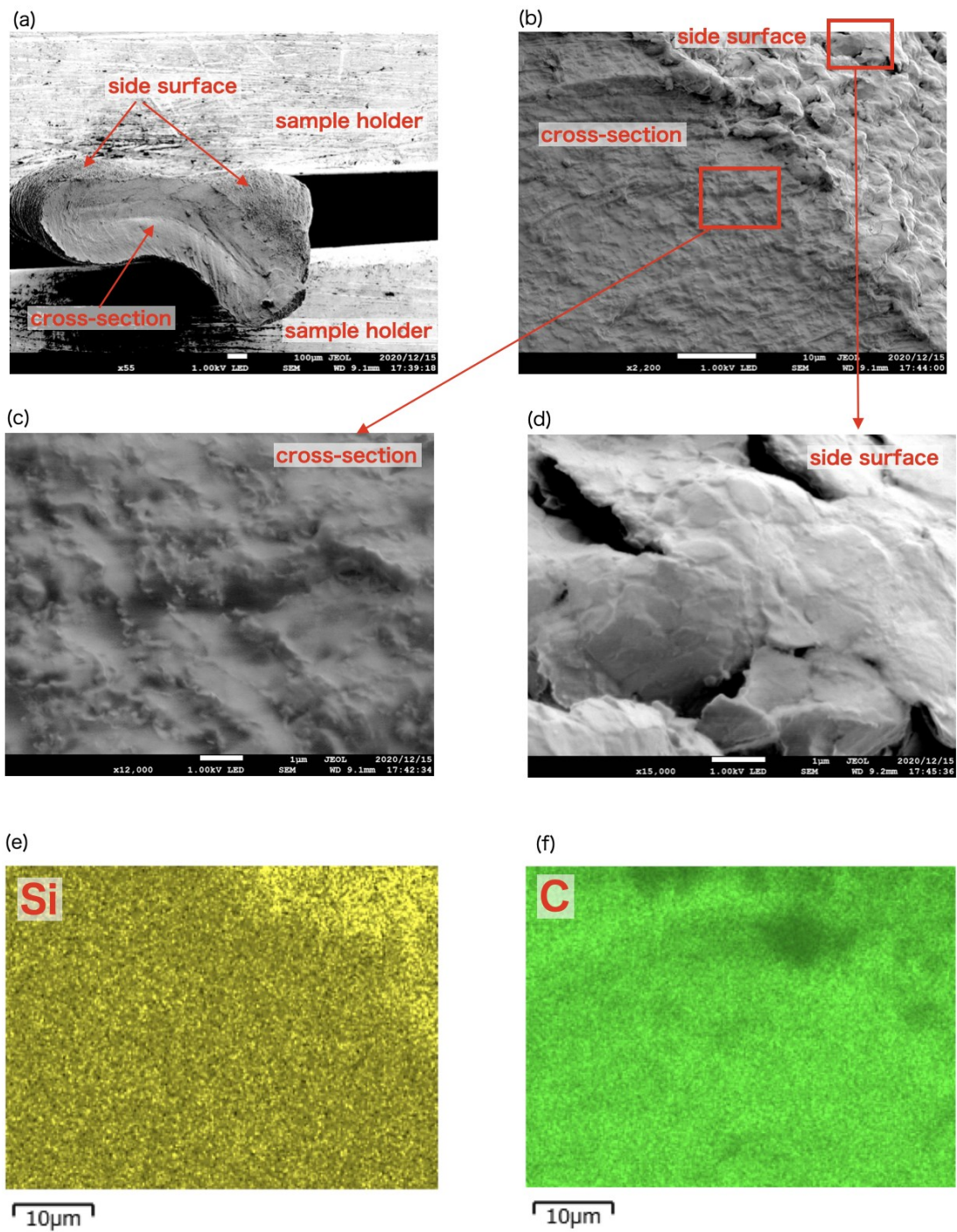


Figure S4 (a)-(d) SEM and (e)(f) EDS mapping images of the nanosheets/polyurethane nanocomposite fibers loaded with 5 wt% of the nanosheets. The EDS images corresponds to the image (b).

Supporting Information 5

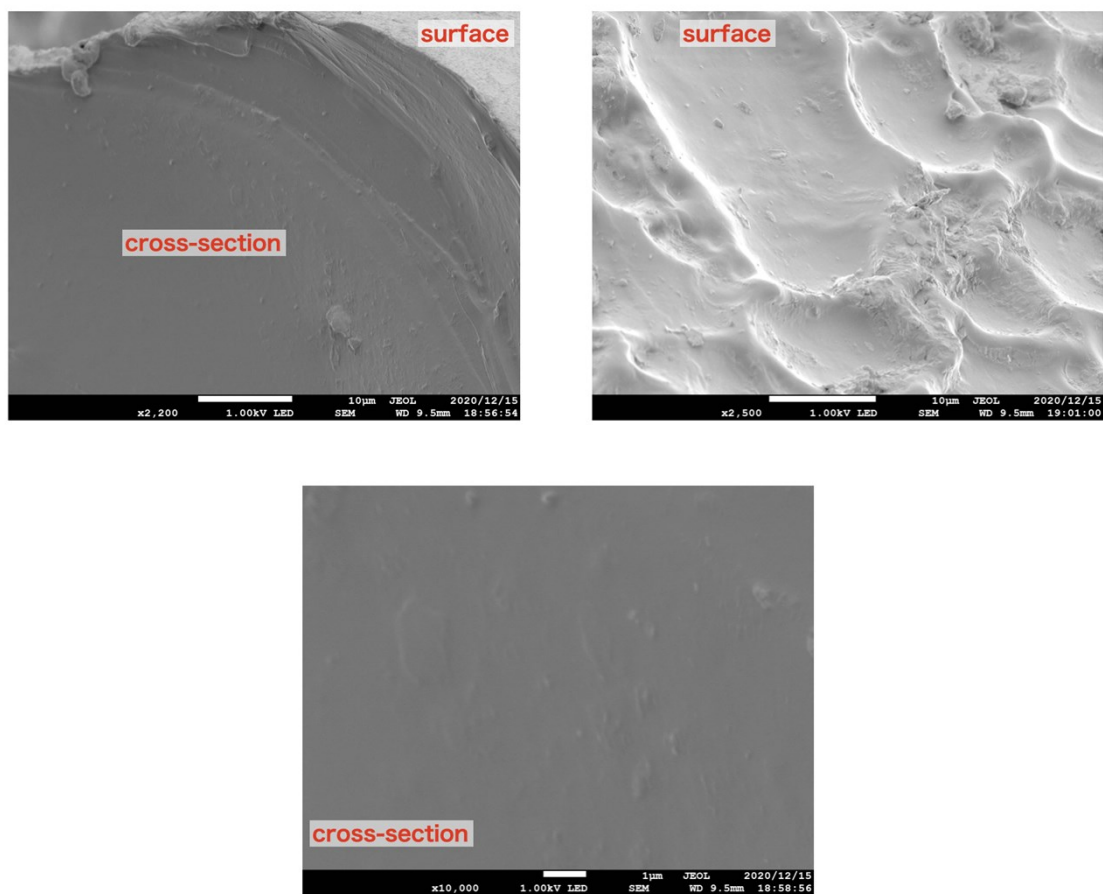


Figure S5 SEM images of the pristine polyurethane fiber without nanosheets. (b) and (c) are the magnified images of (a)