Electronic Supplementary Information (ESI) for New Journal of Chemistry

The fabrication and molecular alignment of poly(ethylene oxide) grating film based on hot embossing technology

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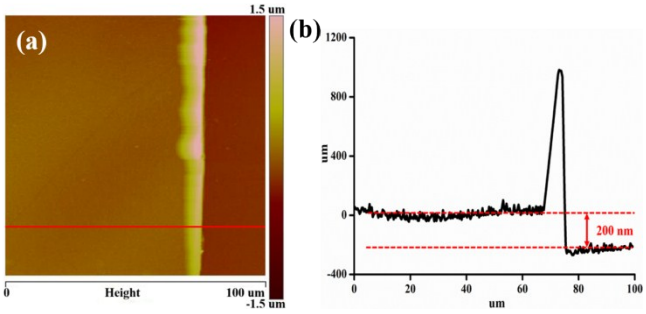

Fig. S1 The AFM height image of pristine PEO film for the thickness measurement (a) and cross-sectional profile of AFM height image (b).

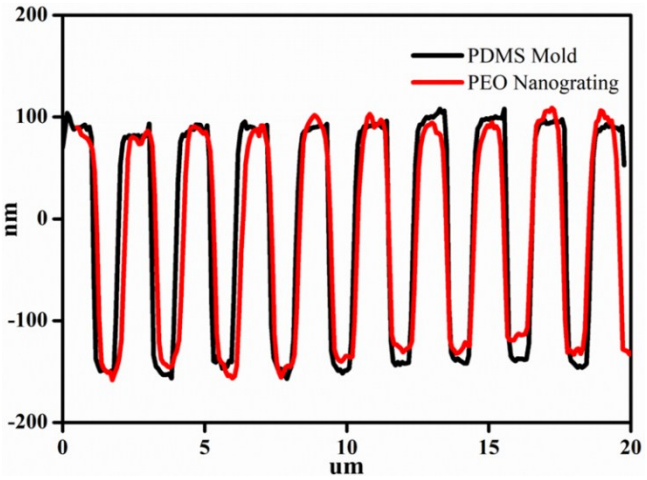

Fig. S2 The cross-sectional profiles of AFM height images for PDMS template and the fabricated PEO grating structure. PEO film is first heating to a temperature above 80 °C to eliminate the thermal history and next is transferred to 30 °C at once to carry out the hot embossing process.

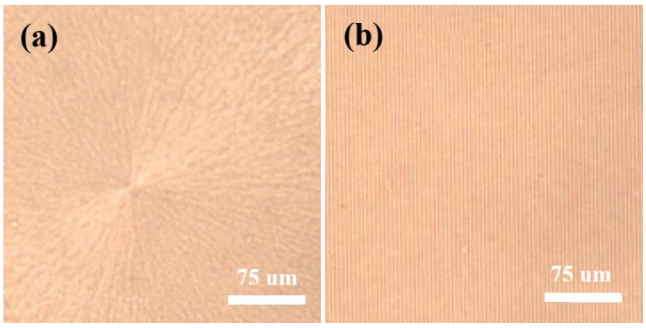

Fig. S3 Polarized optical microscopy (POM) images of PEO polymer film: (a) pristine film and (b) PEO grating film.

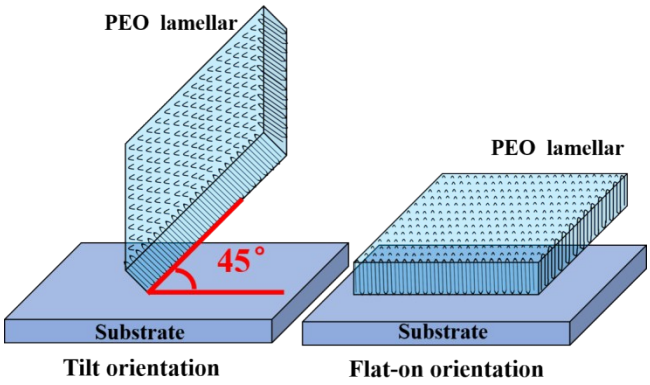

Fig. S4 Schematic indication of tilt and flat-on orientation of PEO lamellar orientation.

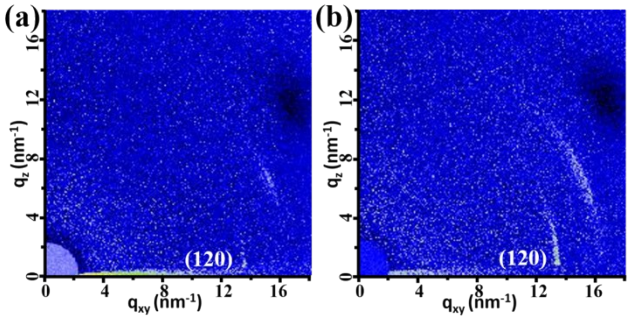

Fig. S5 The 2D GIWAXD patterns of thermal treatment PEO film with various thickness for: (a) 30 nm and (b) 200 nm. The thermal treatment is performed by the same conditions as the fabrication of PEO grating film but with an unpatterned PDMS film rather than patterned PDMS film as template.

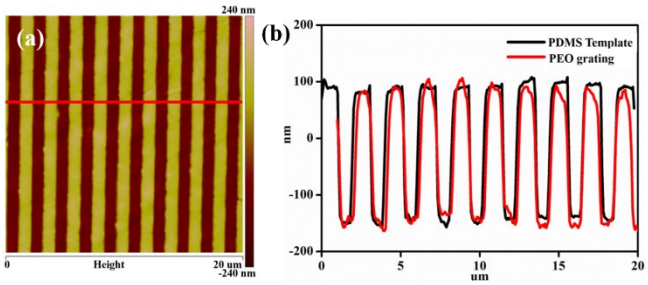

Fig. S6 The AFM height pattern of PEO grating film (a) and cross-sectional profile of AFM height images for PDMS template and the fabricated PEO grating structure (b). PEO film is first heating to a temperature above 80 °C to eliminate the thermal history and next is transferred to 35 °C at once to carry out the hot embossing process.