

## Supporting Information for

### Grafting of a Thermotropic Fluorinated Mesogens on Polysiloxane to Improve the Processability of Linear Low-Density Polyethylene

Wenqing Wu<sup>\*a</sup>, Pan Li<sup>\*b</sup>, Xiaohang Wang<sup>c</sup> and Baoyan Zhang<sup>d</sup>

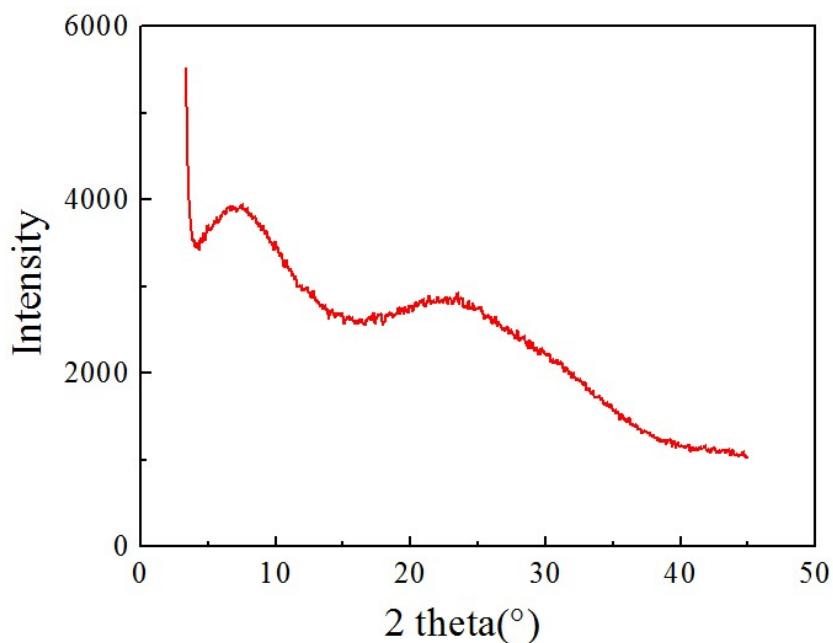


Figure S1. X-ray diffraction patterns of P6 measured after heating to liquid crystalline state and cooling to room temperature.

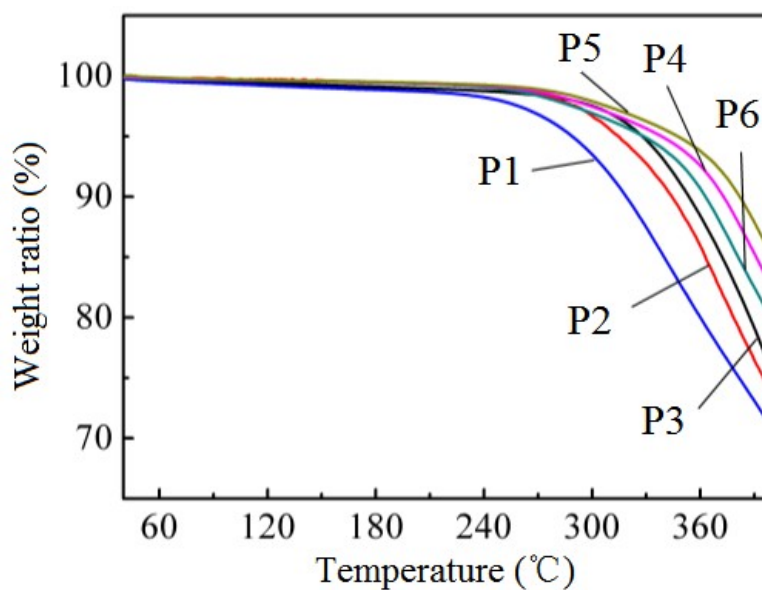


Figure S2. TGA curves of TSCPFLCP series.

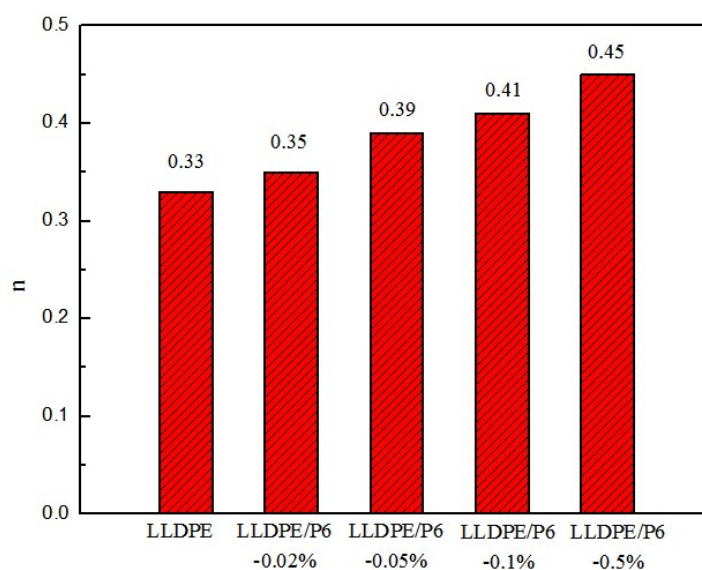


Figure S3. The  $n$  values of LLDPE/TSCPFLCP blends with various TSCPFLCP loading.

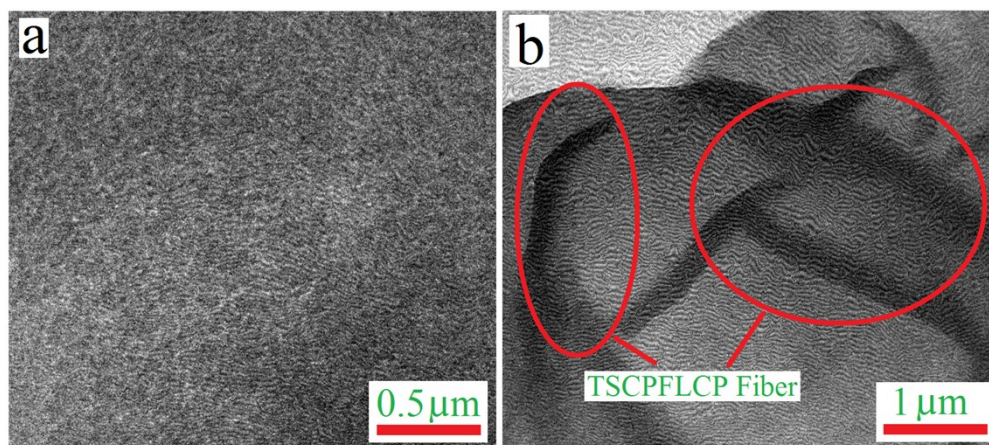


Figure S4. TEM images obtained from fracture surface of (a) pure LLDPE and (b) LLDPE/P6-0.5%.

### Calculation of the grafting ratio of $M_1$ and $M_2$

First, for  $M_1$  and  $M_2$ , the four methylene groups (labelled as  $c_1$  and  $c_2$  in Figure 2b respectively) of the cyclohexane moiety which is adjacent to the vinyl group can be easily identified based on its integral ratio to the vinyl bond.

Second, for representative P6, we integrate the multiple peaks ( $e_1$ ) in the aromatic region as **18**, corresponding to **6** mol of  $M_1$ . As a result, the  $c_1$  fraction in the heavily overlapped region ( $c_1 + c_2$ ) equals to **48**.

Since the overall integral is **~58**, the  $c_1$  fraction is **~10**, corresponding to **1.25** mol of  $M_2$ . Therefore, the grafting ratio of  $M_1$  and  $M_2$  is calculated to be **6.0 : 1.25**.