

Electronic Supplementary Information (ESI)

Influence of surface polarity of carbon nanotubes on electric field induced aligned conductive network formation in a polymer melt

Yu Bao, Huan Pang, Ling Xu, Cheng-Hua Cui, Xin Jiang, Ding-Xiang Yan and Zhong-Ming Li*

College of Polymer Science and Engineering, State Key Laboratory of Polymer Materials Engineering, Sichuan University, Chengdu, 610065, Sichuan, People's Republic of China. Fax: +86-28-85405402; Tel: +86-28-85400211; E-mail: zmli@scu.edu.cn

Replication of the volume resistivity measurements

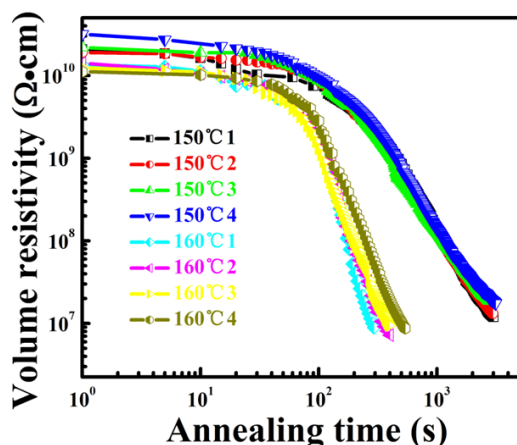


Fig. S1 Dynamic percolation curves of CNT/EVA composites with 1 wt. % CNT loading measured at 140 °C.

In order to explore the cause of the delta between the 150°C and 160°C curves, we repeated the volume resistivity measurement of 150°C and 160°C more than three times (see Fig S1). The results demonstrate a nice reproducibility of the dynamic percolation behaviour. Thus, the delta between the 150°C and 160°C might be ascribed to an undisclosed polymer transition. Actually, the CNT reorganization velocity is substantially influenced by temperature field. The elevated temperature can lower melt-viscosity of polymer matrix and stronger Brownian motion of conductive fillers, which both favour the movement of CNTs in EVA matrix. Moreover, compared to CNT-COOH/EVA system, the relatively weak affinity between CNTs and EVA matrix might be more sensitive to temperature field, leading to a delta between the 150°C and 160°C curves.