

## ***Supporting Information***

### **Role of compatibilizer in multicomponent polymer mixtures under shear flow**

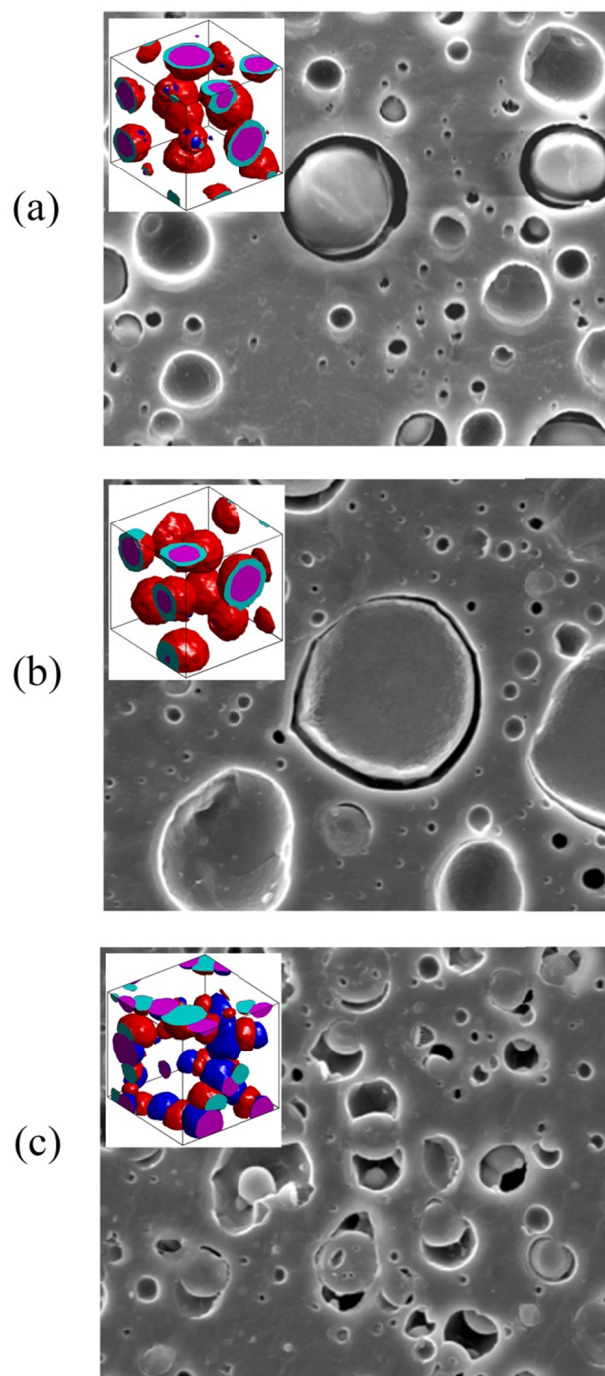
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#### **Some Details of Experiments**

Polypropylene/polystyrene/polyamide 6 (PP/PS/PA6) ternary blends without and with compatibilizer are compared to the simulation system. The blends are prepared by melt-blending in the Rheocord Haake Batch Mixer at 230°C, then the sample is smoothed by a freezing microtome (Leica EM-UC7) with a glass knife and the PS phase is etched using dichloromethane. A scanning electron microscope (FEI Quanta 200) is used to observe the morphology of the blend. The compatibilizers PP-g-PS and PP-g-GMA are prepared by melt grafting experiments<sup>1</sup> and the grafting ratio is about 0.5% ~ 1.0%. All materials are commercially available. Detailed and systematical methods and results regarding the experiments will be published elsewhere.

Fig. S1 shows the representative morphologies from simulations and experiments of PP/PS/PA6 ternary blends, where the interaction parameters of simulations between homopolymers are chosen as  $\gamma_{AB} = 2.37$ ,  $\gamma_{AC} = 5.43$  and  $\gamma_{BC} = 2.68$ , corresponding to the experimental system.<sup>2</sup>



**Figure S1.** Scanning electron micrographs of PP/PS/PA6 ternary blends after extraction of the PS phase. (a) Without compatibilizer. (b) With compatibilizer PP-g-PS. (c) With compatibilizer PP-g-GMA. The insets are the simulated morphologies of A/B/C ternary blends without compatibilizer (a), with compatibilizer A-g-B (b), and with compatibilizer A-g-C (c).

## References

- 1 J. L. Li and X. M. Xie, *Polymer*, 2012, **53**, 2197-2204.
- 2 T. S. Omonov, C. Harrats and G. Groeninckx, *Polymer*, 2005, **46**, 12322-12336.