Electronic Supplementary Information(ESI)

**Root-like glass fiber with branched fiber prepared via molecular self-assembly**

Xuewei He, Yijun Li, Min Nie*, Qi Wang

Address: State Key Laboratory of Polymer Material Engineering, Polymer Research Institute of Sichuan University, Chengdu 610065, China

Email: poly.nie@gmail.com

Fax: +86-28-85402465

Tel: +86-28-85405133

As shown in Figure 1, the encapsulation of glass fiber(GF) by polydopamine shells was achieved successfully through the oxidative polymerization of dopamine. As a result, the surface hydrophilicity of GF was changed due to OH groups of polydopamine. The static water contact angle decreased from 97.5$^{o}$ to 74.3$^{o}$, which was similar to that of TMB-5, 73.4$^{o}$. Accordingly, TMB-5 preferred to wet and finally assemble on the surface of the modified GF.

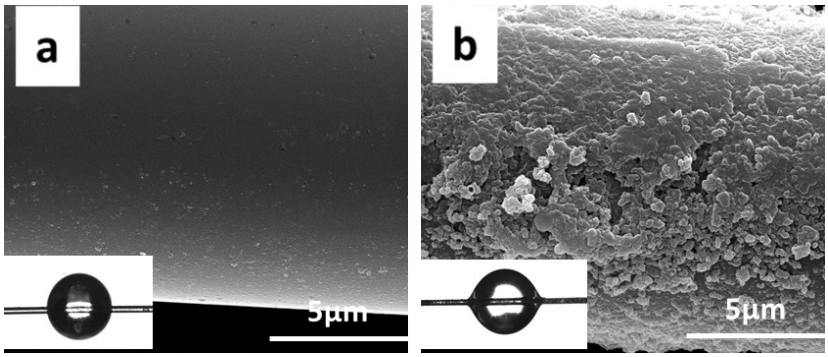


Figure1. SEM photos and static water contact angle of neat GF (a) polydopamine coated GF(b)

10wt% polydopamine-coated GF and PP containing 0.2%TMB were blended and then injection-moulded on HAAKE MiniJet Piston Injection machine. As shown Figure 2, the root-like GF was generated and the yield strength was 54.0MPa, higher than 43.0MPa of neat GF/PP composite.

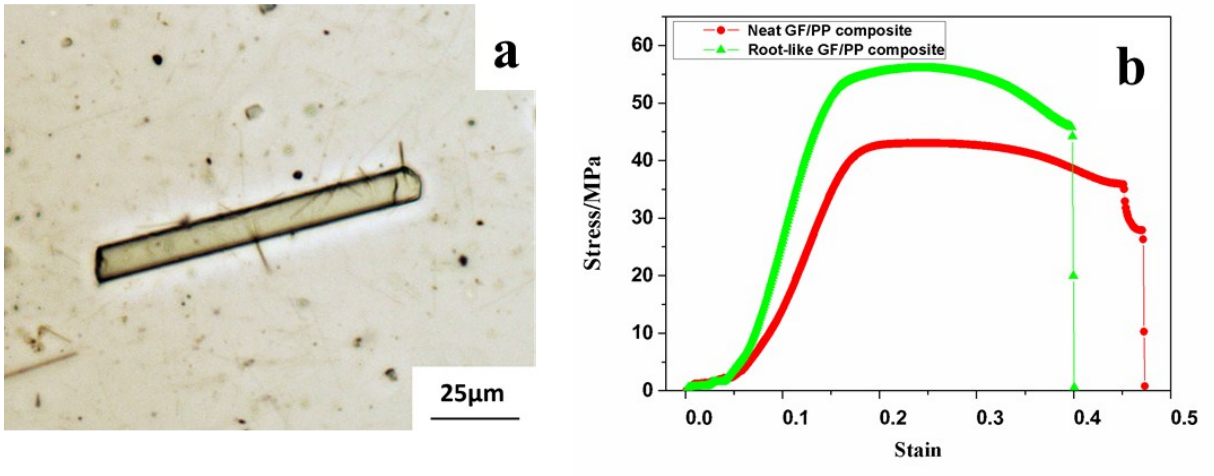


Figure 2 PLM of 10wt% polydopamine-coated GF/PP composite at 180°C(a); stress-stain curves of neat GF and root-like GF reinforced PP composites(b).