

Electronic Supplementary Information (ESI):

Study on the Overmolding Process of Carbon-Fiber-Reinforced Poly (Aryl Ether Ketone) (PAEK)/Poly (Ether Ether Ketone) (PEEK) Thermoplastic Composites

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According to the method used in [1] to calculate the interface temperature, i.e:

$$T_i = (T_{mold} + T_{inj})/2 \quad (1)$$

Where T_i is the interface temperature, T_{mold} is the mold temperature and T_{inj} is the injection temperature. Interface temperature through the mold temperature and melt temperature together control, according to Figure 1 shows, shear strength in the interface temperature of 320 °C after the stabilization, thereafter continue to increase the interface temperature and the impact on the shear strength is smaller, Figure 1 can be learned in the interface temperature of 320 °C, the mold temperature of 260 °C when the shear strength is higher, the final choice of mold temperature 260 °C, melt temperature 400 °C.

[1] Jiang, B.; Fu, L.; Zhang, M.; Weng, C.; Zhai, Z. Effect of thermal gradient on interfacial behavior of hybrid fiber reinforced polypropylene composites fabricated by injection overmolding technique. *Polym. Compos.* **2020**, *41*, 4064–4073. <https://doi.org/10.1002/pc.25693>.

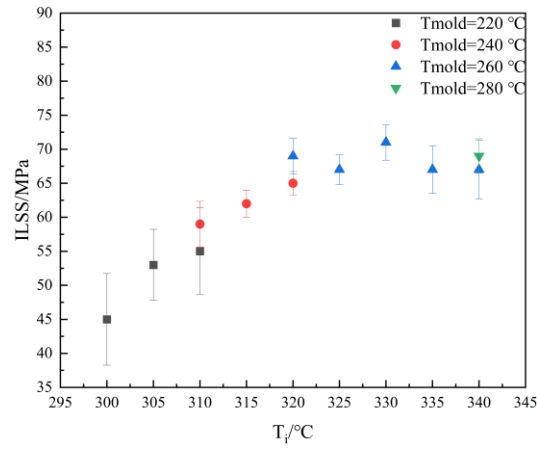


Figure S1. Relationship between interface temperature and shear strength

According to the relationship between the surface temperature of the precast and the preheating time, the surface temperature reaches 260 °C when the preheating time reaches 2 min, but in order to ensure that the whole precast reaches the preset temperature, the preheating time is set to 3 min. It can be observed that the surface temperature of the precast does not change from 3 min to 4 min, ensuring that the precast reaches the preset temperature. Therefore, a preheating time of 3 min was chosen.

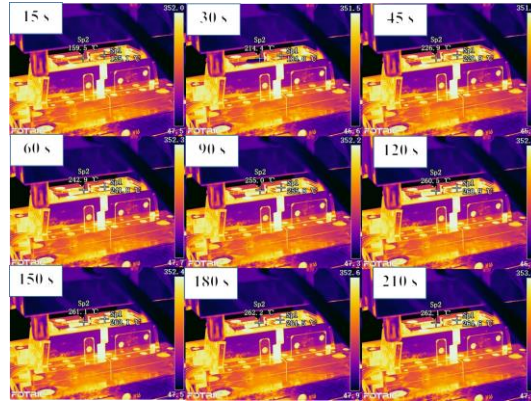


Figure S2. Surface temperature of prefabricated parts in relation to preheating time

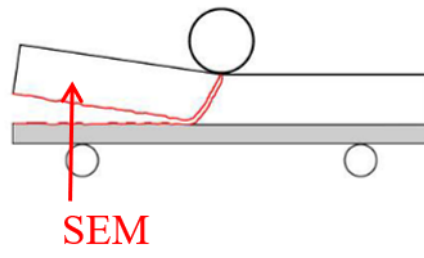


Figure S3. Direction of damage morphological observation