Supplementary Materials

PBT/PC blends compatibilized and toughened via copolymers in-situ formed by MgO-catalyzed transesterification

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Table S1 Thermal properties of PBT, PC, BPM520 and their blends

Sample	$T_{5\%}$ [a] (°C)	T_{max} [b] (°C)	Rate of T_{max} (%/min)	Residue at 700°C (%)
PC	492.8	535.9	37.6	23.3
BPM520	367.3	463.3	23.1	0.0
Sample 12	419.0	540.2	34.8	19.0
Sample 13	406.2	470.8	22.7	13.6
PBT	382.2	413.3	49.9	4.8
BPM520	367.3	463.3	23.1	0.0
Sample 14	386.0	415.5	49.2	5.6
Sample 15	385.6	414.0	48.8	6.7

[a]: $T_{5\%}$ defined as the temperature at which 5wt% weight loss occurs

[b]: T_{max} defined as the temperature at which the maximum weight loss rate occurs

Table S2 DSC data of PBT/PC/BPM520/MgO blends

Sample	T_{cc} [a] (°C)	ΔH_{cc} [b] (J/g)	T_c (°C)	ΔH_m [c] (J/g)	X_c [d] (%)
PBT	54.8	0.9	191.0	48.1	32.4
Sample 1	57.0	2.7	183.2	33.0	31.2
Sample 2	58.2	2.9	170.7	31.2	30.7
Sample 6	65.8	3.9	165.2	30.9	29.3
Sample 7	83.5	10.4	165.9	35.6	27.4
Sample 11	86.7	13.7	175.3	31.9	18.8

a: The cold crystallization temperature

b: The enthalpy value of cold crystallization

c: The normalized melting enthalpy

d: Crystallinity of PBT-phase calculated by

$$X_c = \frac{(\Delta H_m - \Delta H_{cc})/\text{weight\%}}{\Delta H_m^0}$$

Weight% is the quality percentage of PBT in PBT/PC blends, and ΔH_m^0 is the melting enthalpy of a 100% crystalline PBT (145.5 J/g) . [1]

Table S3 DMA data of PBT/PC/BPM520/MgO blends

Sample	T_g1(°C)	T_g2(°C)	ΔT_g (°C)
PBT	65.5	-	-
PC	166.1	-	-
Sample 1	89.6	138.7	49.1
Sample 2	94.6	139.1	44.5
Sample 6	98.0	134.0	36.0
Sample 7	90.3	-	0.0
Sample 11	77.6	103.4	25.8

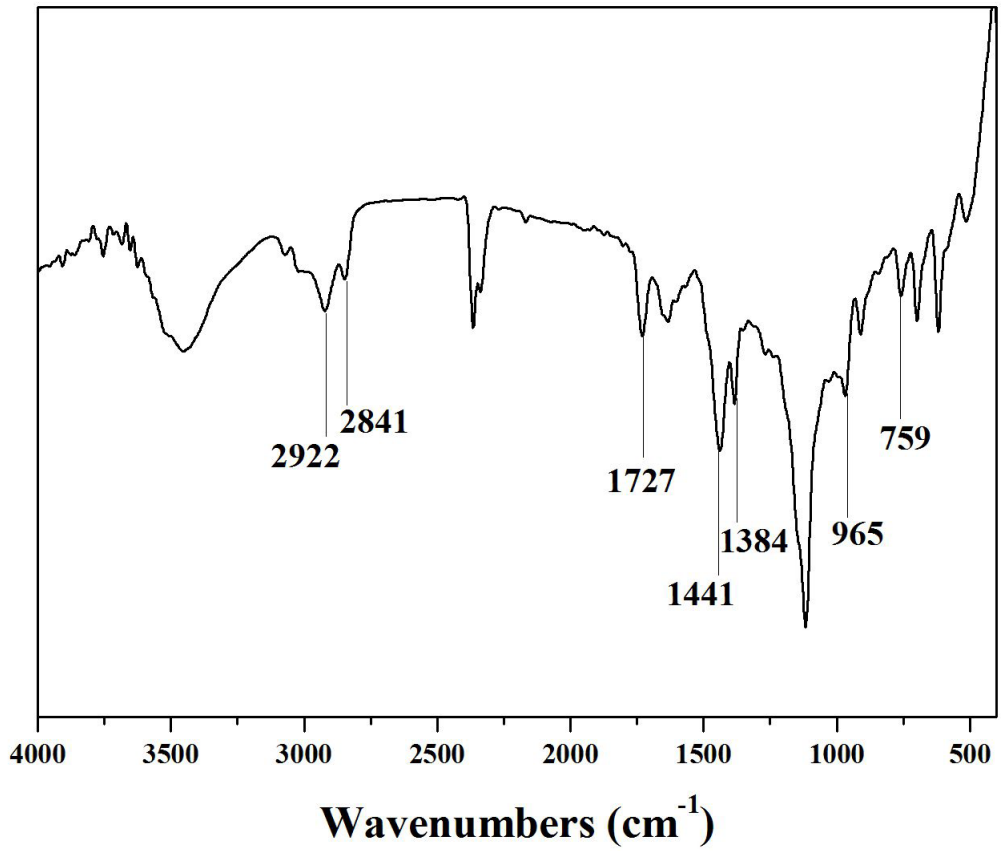

Figure S1 FTIR spectrum of BPM520

Figure S1 shows the FTIR spectrum of BPM520. The peak at 759 cm^{-1} is assigned to CH_2 coupling with C–C skeletal stretching vibration. The peak at 965 cm^{-1} for C–O–C stretching vibration is obvious. Split peaks at 1384 and 1441 cm^{-1} are

assigned to CH_2 or CH_3 stretching. The peak at 1727 cm^{-1} is assigned to stretching frequency of C=O. And the peak at 2841 and 2922 cm^{-1} are assigned to C-H stretching of CH_2 or CH_3. All the characteristic absorption peaks means that BPM520 is consisted of acrylic-based resin[2] and PMMA [3, 4]. However, because BMP520 cannot be dissolved in common solvent, and its signals in solid state nuclear magnetic resonance spectrum are weak, we cannot determined its detailed composition at present.

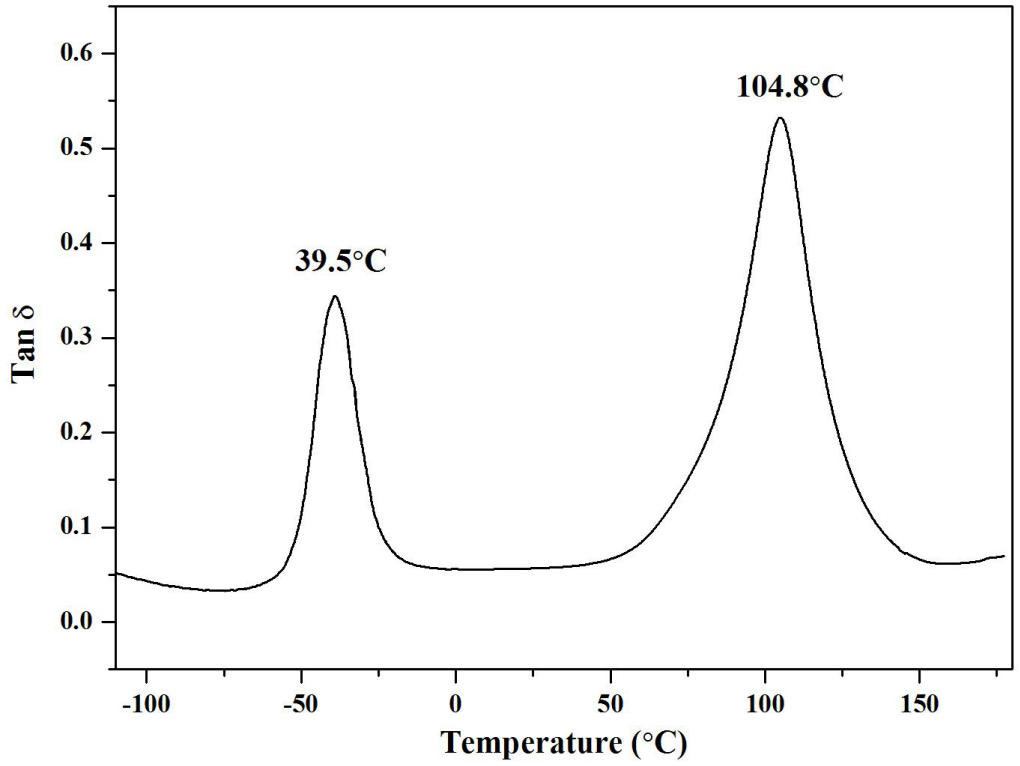

Figure S2 Tanδ *vs* temperature curve of BPM520 obtained from DMA test

In the DMA experimental temperature range (-110-180 °C), Tanδ vs temperature curve of BPM520 exhibits two clearly glass transition temperatures (39.5°C and 104.8°C), which are ascribed to acrylic-based resin[5] and PMMA[6], respectively.

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