

## SUPPLEMENTARY MATERIAL

### Influence of Reinforcing Efficiency of Clay on the Mechanical Properties of Poly(butylene terephthalate) Nanocomposite

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#### Measured Clay Content - Corrected nanocomposites composition

**Table S1.** Corrected nanocomposites composition

Samples	PBT (%wt)	MBClay (%wt)
Neat PBT	100	0
PBT/MBClay (0.9 wt.%)	99.1	0.9
PBT/MBClay (2.3 wt.%)	97.7	2.3
PBT/MBClay (3.7 wt.%)	96.3	3.7
PBT/MBClay (4.9 wt.%)	95.1	4.9

#### Thermal Analysis Results

**Table S2.** Melting enthalpy,  $\Delta H_m$ , melting temperature,  $T_m$  crystallinity,  $\chi_c$  (%), onset degradation temperature and total weight loss for the neat PBT and PBT/MBClay nanocomposites.

Materials	$\Delta H_m$ (J/g)	$\chi_c$ (%)	$T_m$ (°C)	Onset Temp (°C)	Total Weight Loss (%)
Neat PBT	41.0 <sup>a</sup>	29.2 <sup>a</sup>	212.9 <sup>a</sup>	332.5 <sup>a</sup>	89.6 <sup>a</sup>
PBT/MBClay (0.9 wt.%)	41.3 <sup>a</sup>	29.7 <sup>a</sup>	212.9 <sup>a</sup>	332.4 <sup>a</sup>	89.7 <sup>a</sup>
PBT/MBClay (2.3 wt.%)	42.0 <sup>a</sup>	30.7 <sup>a</sup>	213.1 <sup>a</sup>	332.5 <sup>a</sup>	89.2 <sup>a</sup>
PBT/MBClay (3.7 wt.%)	45.6 <sup>b</sup>	34.1 <sup>b</sup>	213.7 <sup>b</sup>	331.2 <sup>b</sup>	83.6 <sup>b</sup>
PBT/MBClay (4.9 wt.%)	46.1 <sup>c</sup>	34.6 <sup>c</sup>	219.1 <sup>c</sup>	337.2 <sup>c</sup>	82.5 <sup>c</sup>

Different lowercase letters in the same column indicate significant differences ( $p < 0.05$ ) between the samples (ANOVA and Tukey's multiple-comparison tests).

### Mechanical Properties Results

**Table S3.** Tensile tests results for the neat PBT and PBT/MBClay nanocomposites

Tensile Parameters	Neat PBT	PBT/MBClay 0.9 wt%	PBT/MBClay 2.3 wt%	PBT/MBClay 3.7 wt%	PBT/MBClay 4.9 wt%
Tensile stress at yield (MPa)	59.2 ± 4.1 <sup>a</sup>	59.0 ± 3.8 <sup>a</sup>	59.1 ± 3.4 <sup>a</sup>	60.6 ± 1.5 <sup>b</sup>	48.4 ± 1.8 <sup>c</sup>
Tensile strength at break (MPa)	38.0 ± 3.4 <sup>a</sup>	38.0 ± 3.2 <sup>a</sup>	40.5 ± 3.0 <sup>a</sup>	60.1 ± 1.9 <sup>b</sup>	47.9 ± 1.6 <sup>c</sup>
Young's modulus (GPa)	2.5 ± 0.1 <sup>a</sup>	2.5 ± 0.1 <sup>a</sup>	2.5 ± 0.2 <sup>a</sup>	2.7 ± 0.1 <sup>b</sup>	2.6 ± 0.1 <sup>c</sup>
Elongation at break (%)	161.6 ± 35 <sup>a</sup>	161.3 ± 32 <sup>a</sup>	148.3 ± 30 <sup>a</sup>	21.1 ± 1.0 <sup>b</sup>	20.5 ± 1.3 <sup>c</sup>

Different lowercase letters in the same line indicate significant differences ( $p < 0.05$ ) between the samples (ANOVA and Tukey's multiple-comparison tests).

**Table S4.** Flexural tests results for the neat PBT and PBT/MBClay nanocomposites

Tensile Parameters	Neat PBT	PBT/MBClay 0.9 wt%	PBT/MBClay 2.3 wt%	PBT/MBClay 3.7 wt%	PBT/MBClay 4.9 wt%
Flexural strength (MPa)	74.2 ± 3.2 <sup>a</sup>	74.0 ± 3.0 <sup>a</sup>	75.3 ± 3.0 <sup>a</sup>	91.7 ± 2.8 <sup>b</sup>	78.7 ± 3.6 <sup>c</sup>
Flexural modulus (GPa)	2.4 ± 0.2 <sup>a</sup>	2.4 ± 0.1 <sup>a</sup>	2.4 ± 0.1 <sup>a</sup>	2.8 ± 0.1 <sup>b</sup>	2.5 ± 0.7 <sup>c</sup>

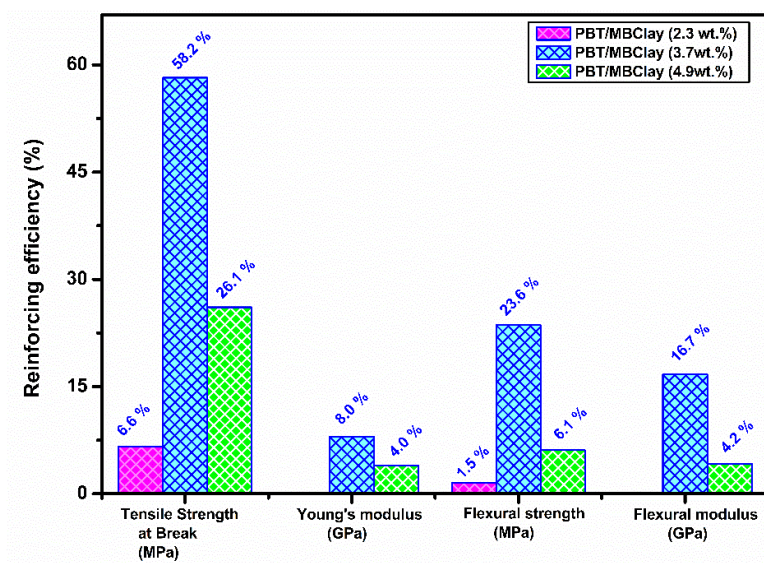
Different lowercase letters in the same line indicate significant differences ( $p < 0.05$ ) between the samples (ANOVA and Tukey's multiple-comparison tests).

**Table S5.** Izod impact and HDT tests results for the neat PBT and PBT/MBClay nanocomposites

Test	Neat PBT	PBT/MBClay 0.9 wt%	PBT/MBClay 2.3 wt%	PBT/MBClay 3.7 wt%	PBT/MBClay 4.9 wt%
Izod Impact (J/m)	72.6 ± 2.1 <sup>a</sup>	72.5 ± 2.0 <sup>a</sup>	72.0 ± 2.1 <sup>a</sup>	47.2 ± 1.4 <sup>b</sup>	37.4 ± 1.1 <sup>c</sup>
HDT (1.82 MPa) (°C)	55.4 ± 3.2 <sup>a</sup>	55.4 ± 3.1 <sup>a</sup>	56.2 ± 2.8 <sup>a</sup>	80.1 ± 6.2 <sup>b</sup>	69.7 ± 5.3 <sup>c</sup>

Different lowercase letters in the same line indicate significant differences ( $p < 0.05$ ) between the samples (ANOVA and Tukey's multiple-comparison tests).

## MBClay's Reinforcing Efficiency



**Figure S1.** Reinforcing efficiency of MBClay on the mechanical properties of PBT/MBClay nanocomposites