Supplementary Information for

Strong enhancements of nucleation and spherulitic growth rates through amplified interfacial effects for immiscible linear polymer/comb-like copolymer double-layer films†

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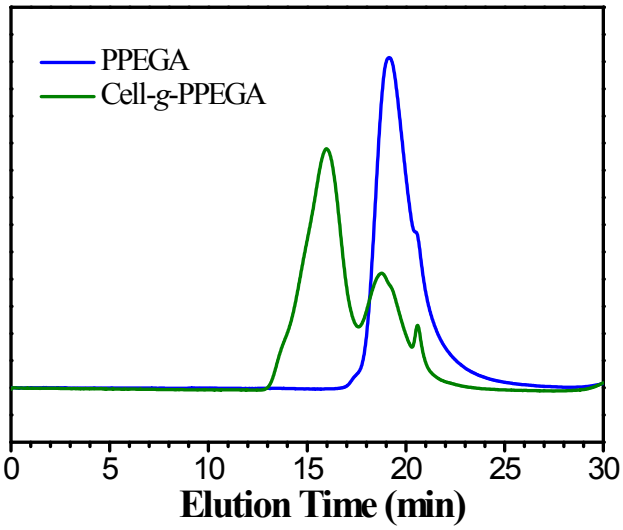

Fig. S1 GPC traces of PPEGA and Cell-*g*-PPEGA copolymers.

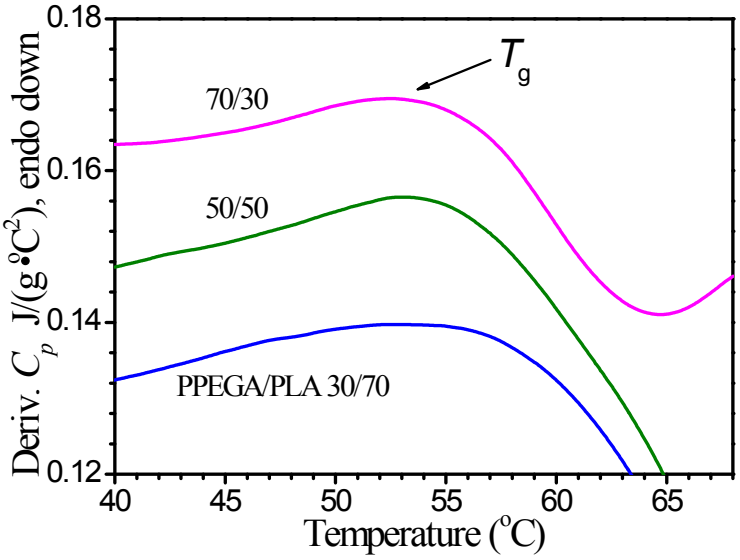

Fig. S2 Temperature derivative heat capacity (C_p) curves for PPEGA/PLA blends with PPEGA compositions of 30, 50, and 70 wt%. Vertical shifts of the curves have been applied for clarity.

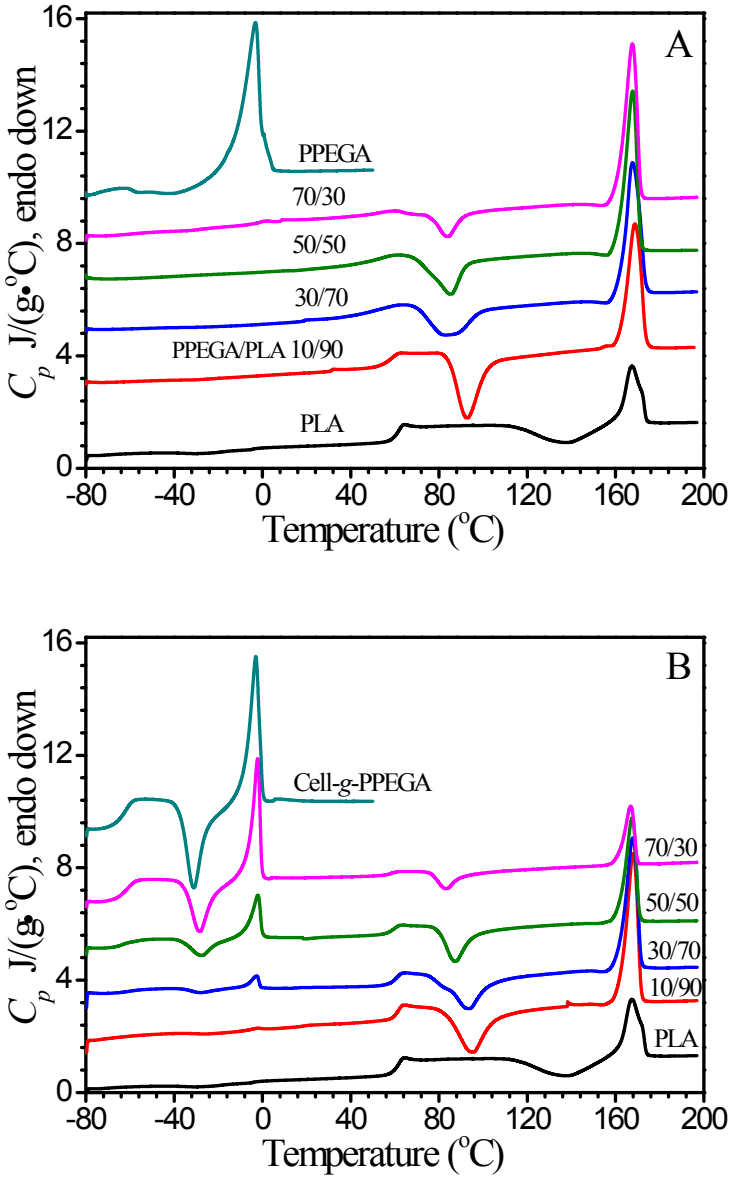

Fig. S3 Heat capacity (C_p) curves for (A) PPEGA/PLA blends and (B) Cell-*g*-PPEGA/PLA blends with PPEGA or Cell-*g*-PPEGA compositions of 0, 10, 30, 50, 70, and 100 wt%.

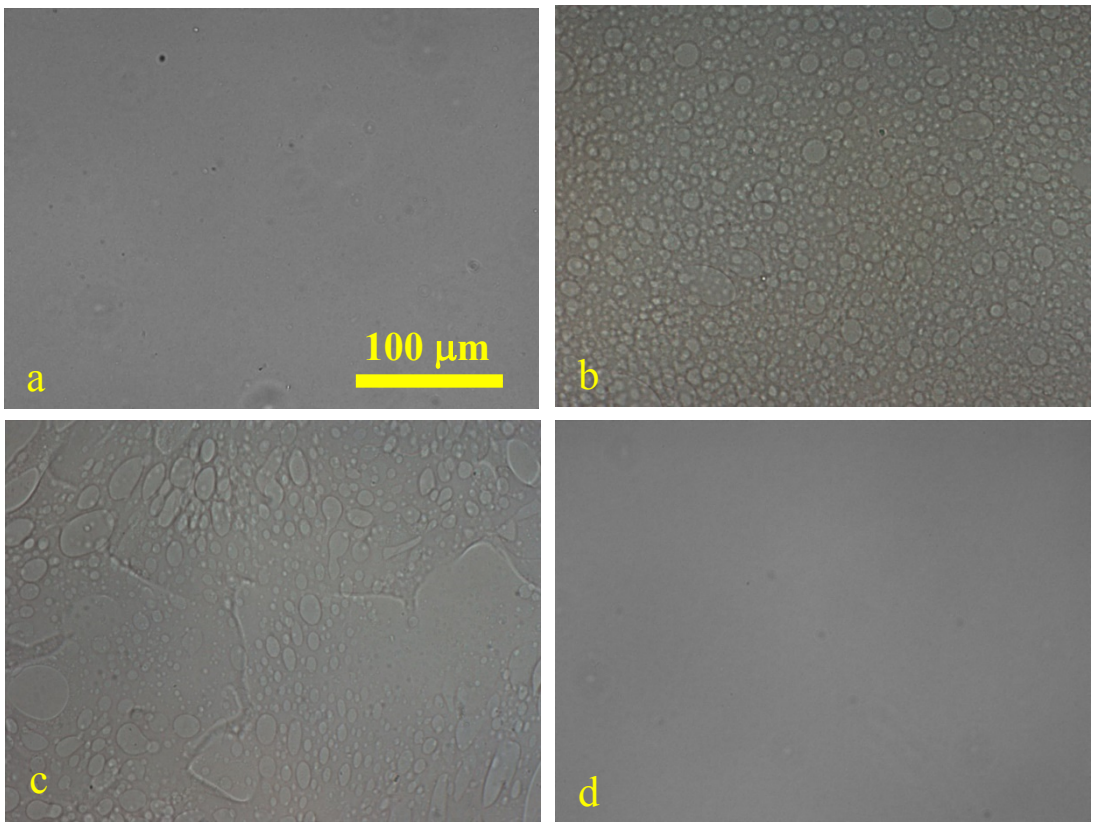

Fig. S4 Phase contrast optical micrographs observed at 200 °C for PPEGA/PLA blends with PPEGA compositions of (a) 10 wt%; (b) 50 wt%; (c) 70 wt% and (d) 100 wt%. The scale bar in (a) represents 100 µm and is applied to all other micrographs.

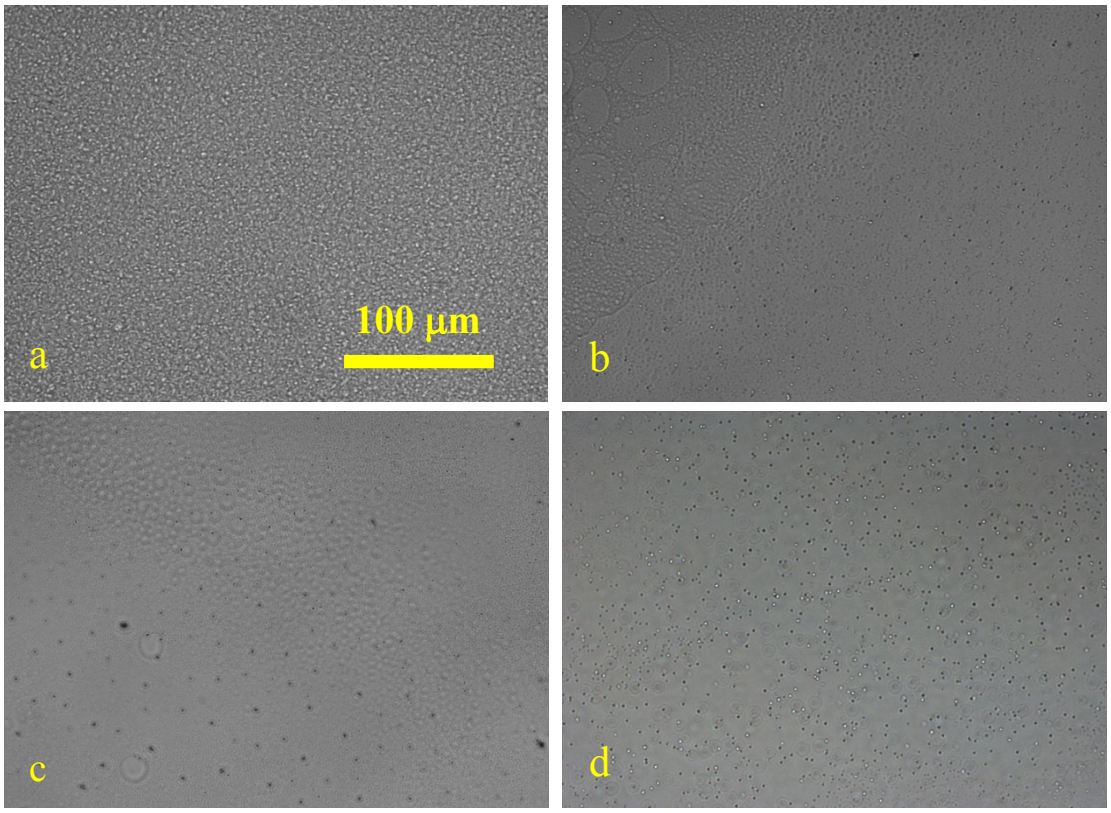

Fig. S5 Phase contrast optical micrographs observed at 200 °C for Cell-*g*-PPEGA/PLA blends with Cell-*g*-PPEGA compositions of (a) 10 wt%; (b) 50 wt%; (c) 70 wt% and (d) 100 wt%. The scale bar in (a) represents 100 µm and is applied to all other micrographs.

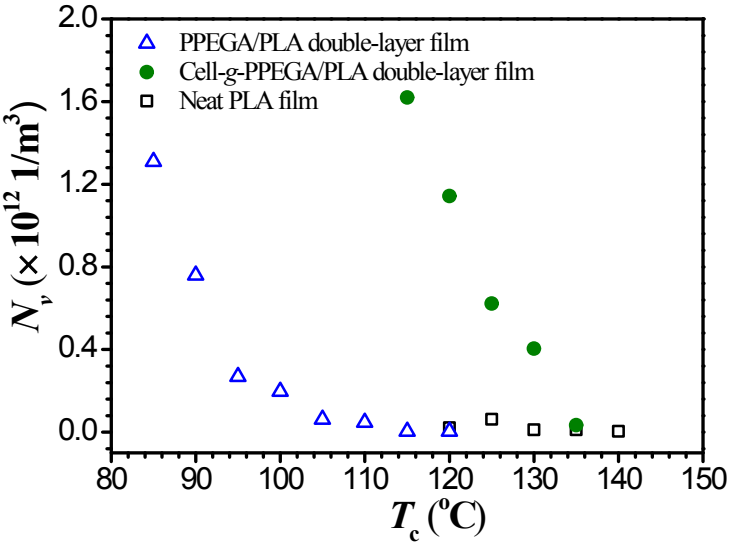

Fig. S6 Changes in nucleation density, N_v as functions of T_c for neat PLA and Cell-*g*-PPEGA/PLA and PPEGA/PLA double-layer films.

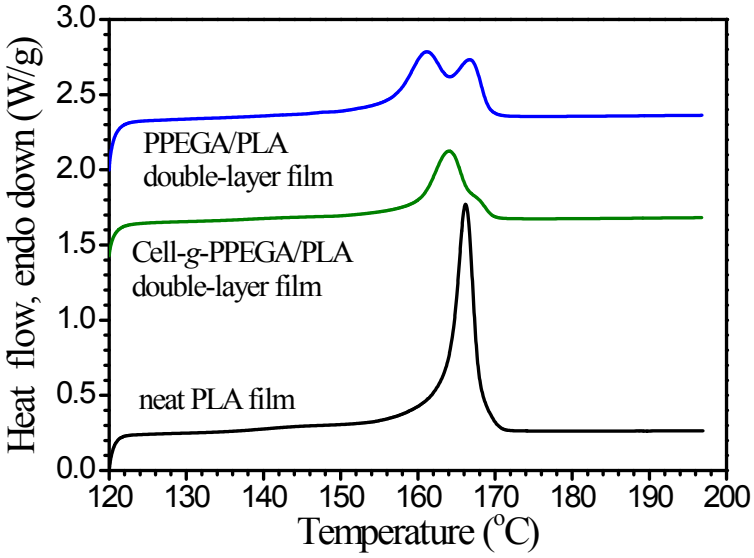

Fig. S7 DSC heat flow curves for neat PLA and Cell-*g*-PPEGA/PLA and PPEGA/PLA double-layer films during heating scan from 120 to 200 °C after the film samples isothermally crystallize at 120 °C for 60 min. The heating rate is 10 °C /min. The curves are shifted for clarity.

Table S1. Mass Fraction, Enthalpy of Fusion and Crystallinity Values for Neat PLA and Cell-*g*-PPEGA/PLA and PPEGA/PLA Double-layer Films during the Heating Scan from 120 to 200 °C after Isothermal Crystallization at 120 °C for 60 min.

Sample code	w_{PLA} [a]	ΔH_m (J/g) [b]	$\Delta H_m'$ (J/g)′ [c]	X_c (%) [d]
PLA	100%	35.2	35.2	37.6
Cell-*g*-PPEGA/PLA	50.4%	19.3	38.3	40.9
PPEGA/PLA	51.7%	27.2	52.6	56.2

[a]Mass fraction of PLA in the sample; [b]Enthalpy of fusion obtained from the heat flow curves from DSC measurements; [c]Normalized enthalpy of fusion, $\Delta H_m' = \triangle H_m / w_{PLA}$; [d]Normalized crystallinity, $X_c = \Delta H_m'/93.6 \times 100$ %. The enthalpy of fusion for 100 % crystalline PLA is 93.6 J/g.