

Effects of chain extender on properties and foaming behavior of polypropylene foam

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Table S1. Compositions of PP/GMA mixtures

Sample	PP (wt%)	GMA (phr)	Phenolic antioxidant (phr)
1	100	0	0.3
2	100	0.5	0.3
3	100	1.0	0.3
4	100	1.5	0.3
5	100	2.0	0.3
6	100	2.5	0.3
7	100	3.0	0.3

Table S2. Δ MFI of PP, grafted PP, and modified PP

Sample	Δ MFI
PP	11.6
GPP	21.8
MPP0.5	11.4
MPP1.0	9.8
MPP1.5	4.5
MPP2.0	3.8

$$\Delta\text{MFI} = \text{MFI } 240\text{ }^\circ\text{C} - \text{MFI } 200\text{ }^\circ\text{C}$$

Table S3. Effect of AA content on thermal stability of modified PP

Description	T _{d,5} (°C)	T _{d,10} (°C)	T _{d,max} (°C)
PP	339.3	355.3	425.6
GPP	331.5	352.9	432.3
MPP0.5	341.5	360.0	433.2
MPP1.0	342.5	361.6	432.9
MPP1.5	346.7	366.7	434.4
MPP2.0	347.2	367.1	433.5

Table S4. DSC data for PP, grafted PP, and modified PP samples

Sample	T _c (°C)	T _m (°C)	ΔH _f (°C)	X _c (°C)
PP	121.0	165.2	137.0	65.6
GPP	127.4	164.8	119.8	57.3
MPP0.5	134.6	165.2	115.6	55.3
MPP1.0	134.8	165.8	111.3	53.3
MPP1.5	135.4	165.2	108.9	52.1
MPP2.0	135.9	165.3	109.4	52.3

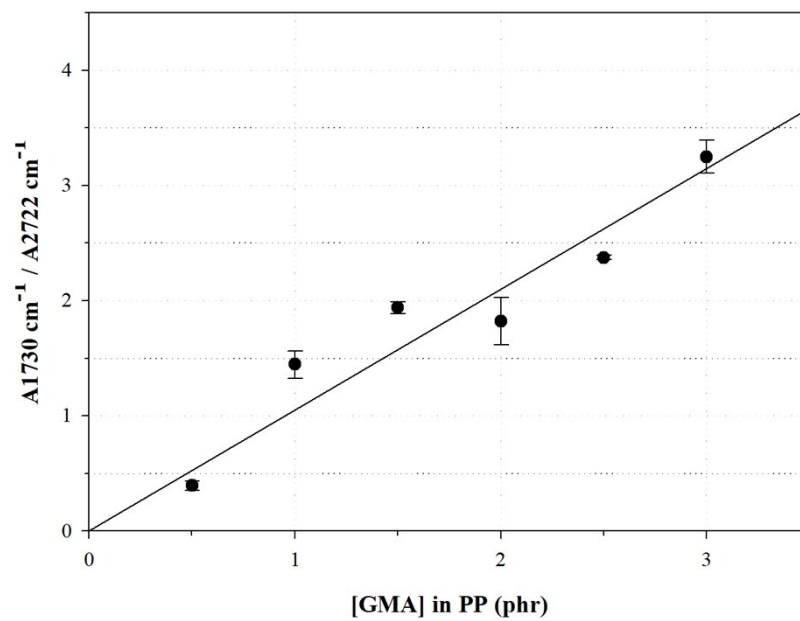


Figure S1. IR calibration curve for determining the amount of GMA grafted onto PP

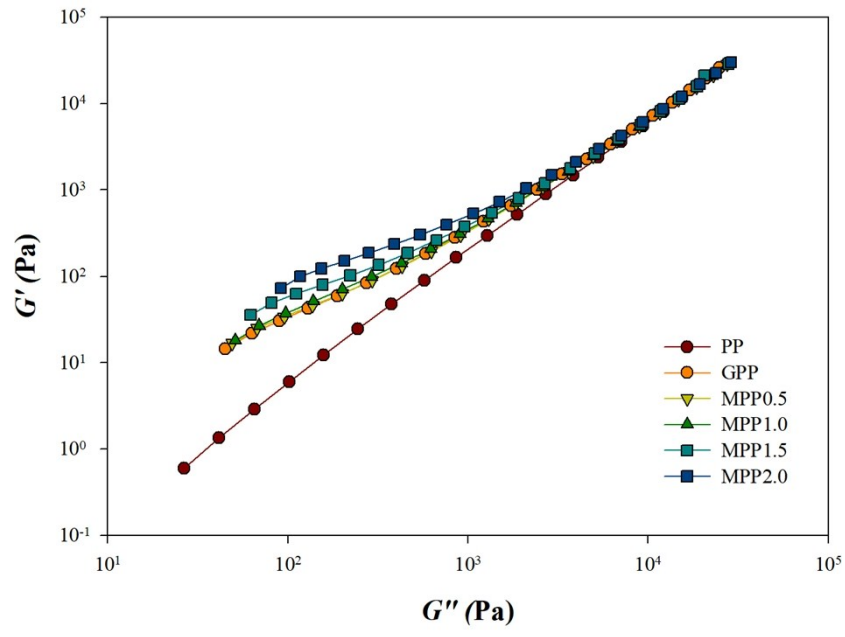


Figure S2 Cole–Cole plot analysis for PP, grafted PP, and modified PP samples.

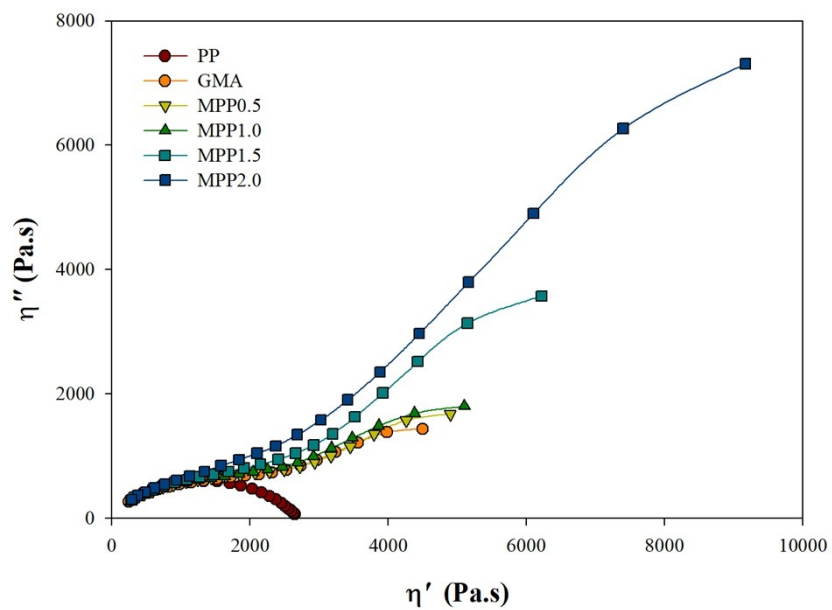


Figure S3. Han plot analysis for PP, grafted PP, and modified PP samples.

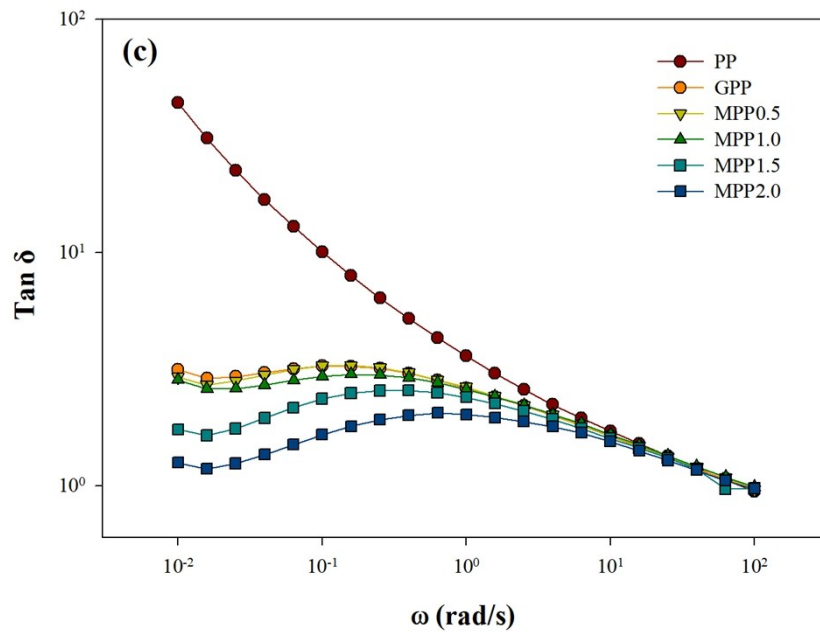


Figure S4. Loss factor analysis ($\tan \delta$) of PP, grafted PP, and modified PP samples.

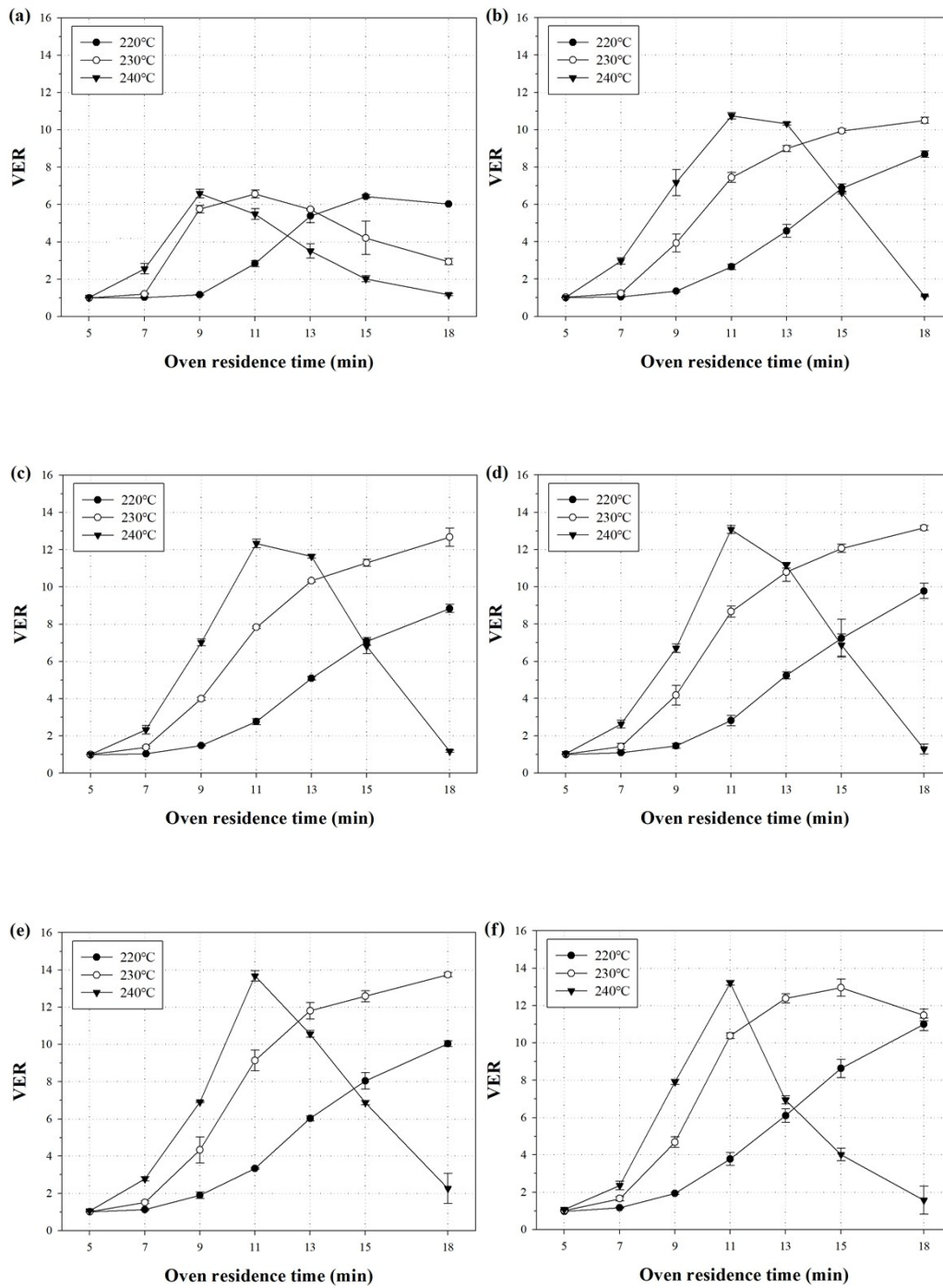


Figure S5. Variation of VER with ORTs for modified PP foams with various AA contents at different temperatures: (a) PP, (b) GPP, (c) MPP0.5, (d) MPP1.0, (e) MPP1.5, and (f) MPP2.0.