Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting information

The efficient chain transfer reaction of the trithiocarbonate unit as a tool to prepare functional polyolefin: A post-polymerization modification of ethylene-propylene-diene terpolymer for improved oil resistance

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Table S1. Elemental composition of pentadecane-*graft*-benzyl TTC

Elemental composition	C (wt.-%)	H (wt.-%)	S (wt.-%)	N (wt.-%)	O (wt.-%)
Theoretical value [a]	67.1	9.6	23.3	0.0	0.0
Experimental value	70.3	11.3	16.7	0.9	0.8

[a] Calculated by using elemental mass values of pentadecane-*graft*-benzyl TTC.

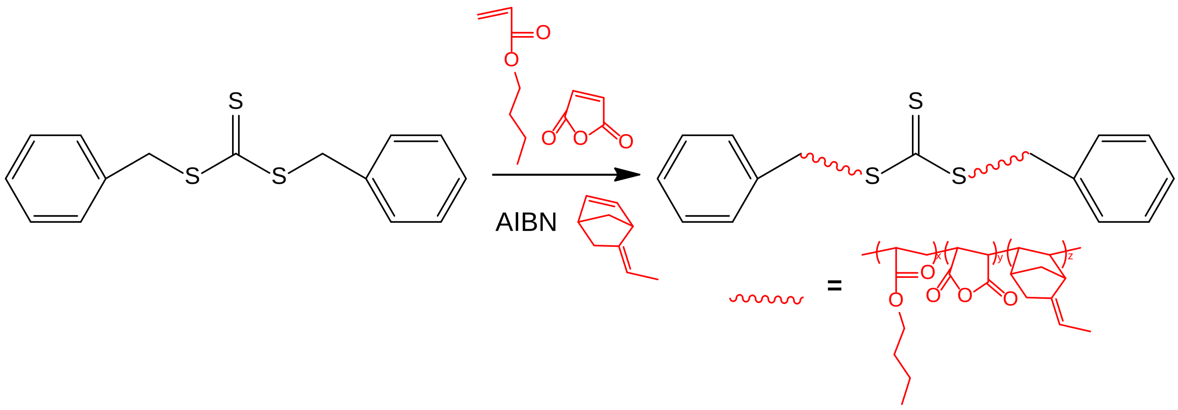

Figure S1. Schematic representation of the preparation of poly(*n*BA-*co*-Mah-*co*-ENB) through DBTTC mediated RAFT polymerization: Resulting poly(*n*BA-*co*-Mah-*co*-ENB) contains TTC unit at the middle of polymer chain.

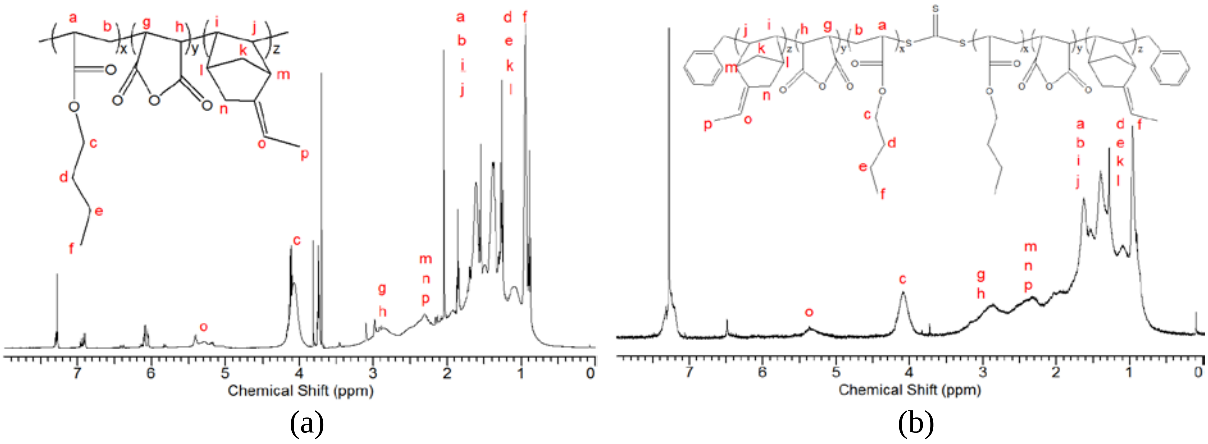

Figure S2. ^{1}H-NMR spectra of poly(*n*BA-*co*-Mah-*co*-ENB) prepared through conventional FRP (a) and DBTTC mediated RAFT polymerization (b).

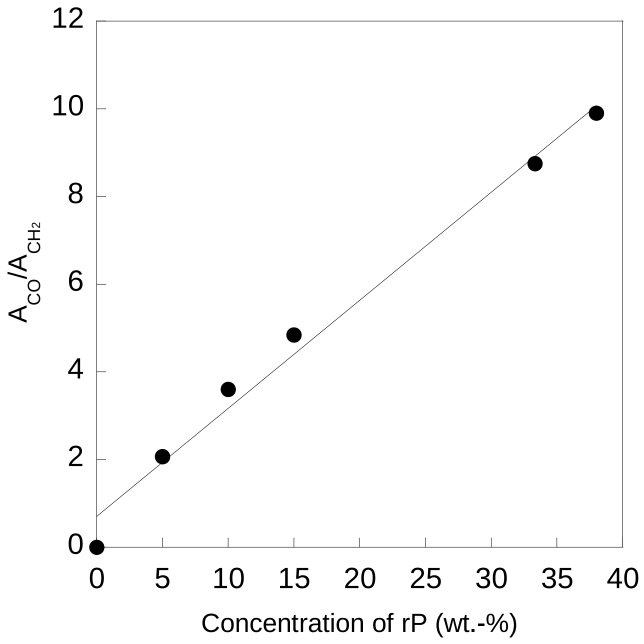

Figure S3. Calibration curve for the determination of composition of modified EPDM products by FT-IR.

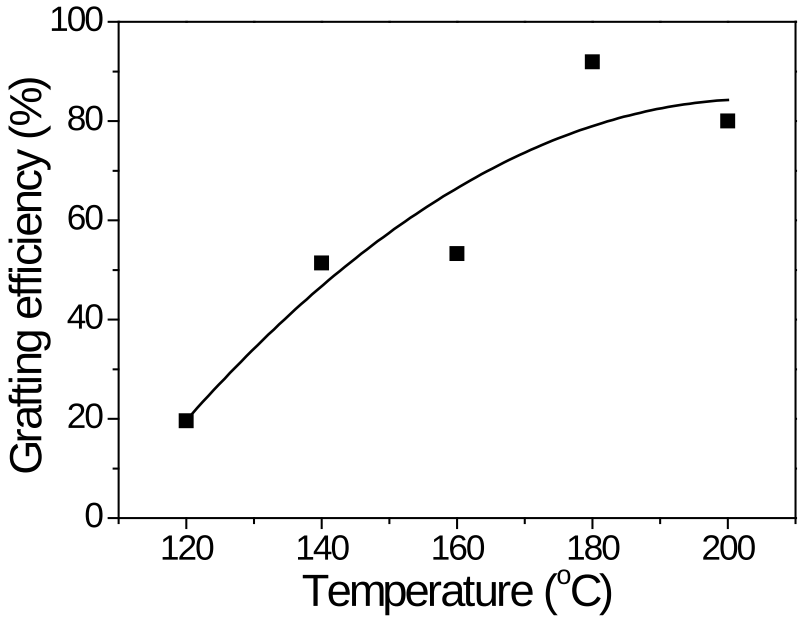

Figure S4. Effect of the reaction temperature on grafting efficiency: Preparation of pentadecane-*graft*-benzyl TTC: GE (pentadecane-*graft*-benzyl TTC, %) = [(amount of pentadecane-*graft*-benzyl TTC formed in mol) / (amount of DBTTC in initial mixture in mol)] × 100.

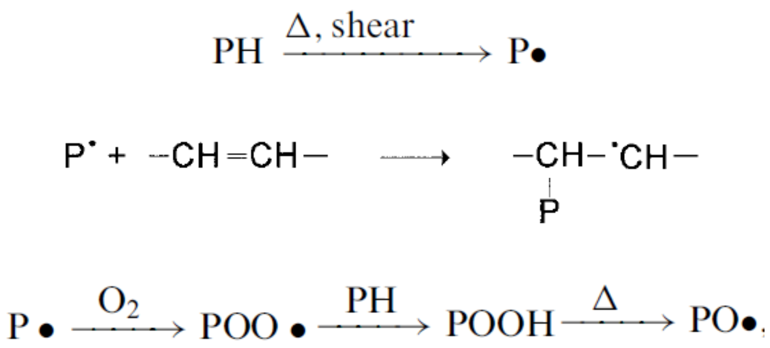

Figure S5. Schematic representation of the generation of macroradicals during melt processing and their plausible subsequent radical reactions [J. Pospíšil, Z. Horák, Z. Kruliš, S. Nešpurek and S.-i. Kuroda, *Polym. Degrad. Stabil.*, 1999, **65**, 405-414].

Figure S6. Photograph of EERR solution in toluene/THF: Clear solution represented a complete dissolution of EERR in toluene/THF and a negligible amount of crosslinked product.

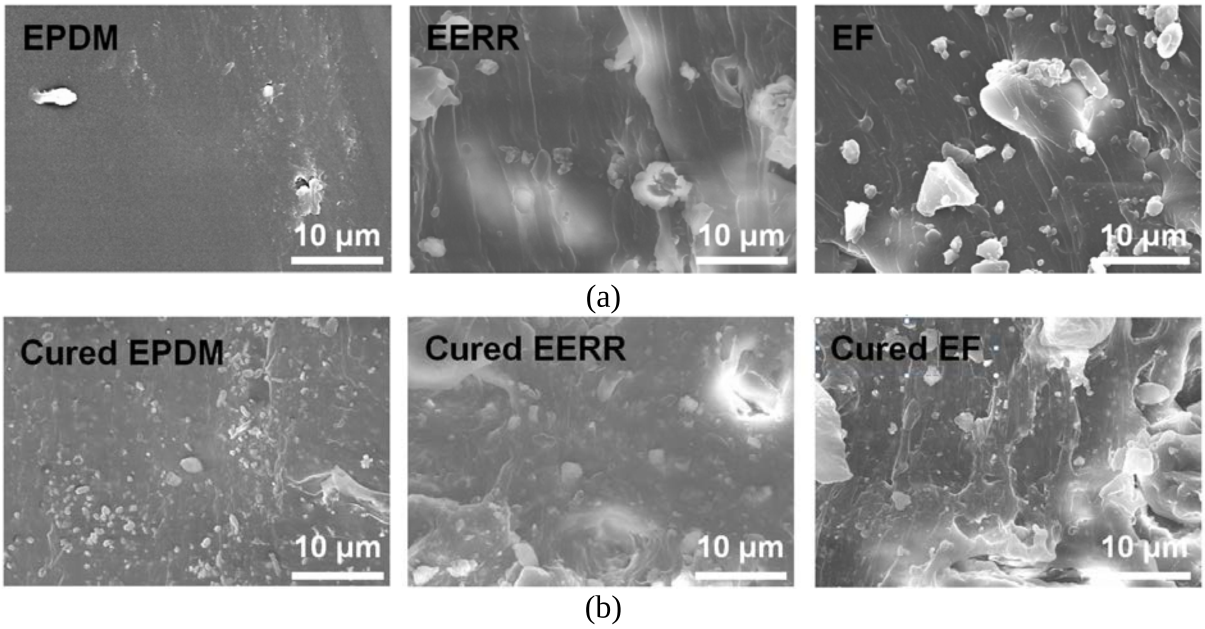

Figure S7. FE-SEM images of EPDM and modified EPDMs before (a) and after (b) curing.

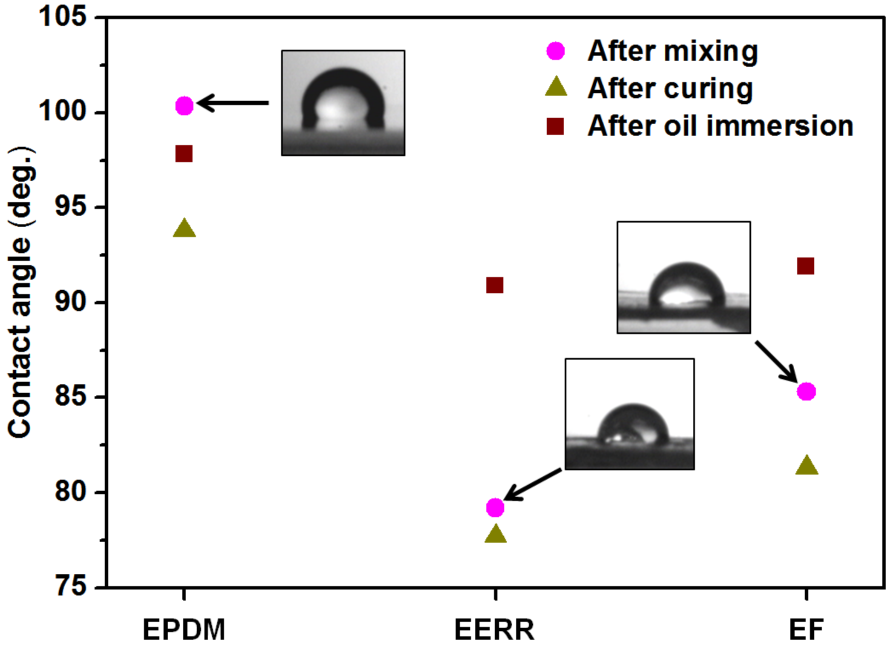

Figure S8. Contact angle values EPDM and modified EPDMs after mixing, curing and oil immersion.