

## Supporting Information

### **Copolymerization of 1,3-Butadiene with Phenyl/Phenethyl Substituted 1,3-Butadienes: A Direct Strategy to Access Pendant Phenyl Functionalized Polydienes**

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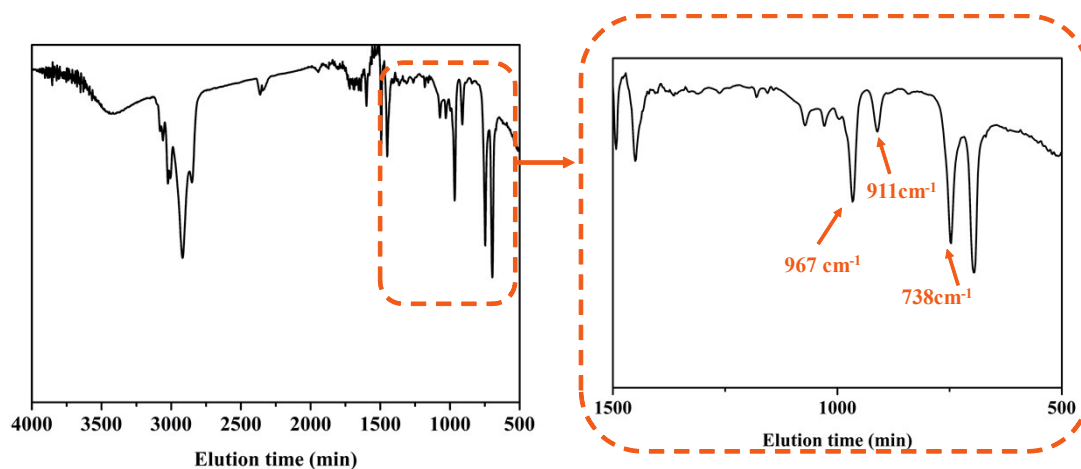
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<sup>c</sup> *School of Chemical Engineering, Changchun University of Technology, Changchun 130012, P. R. China;*

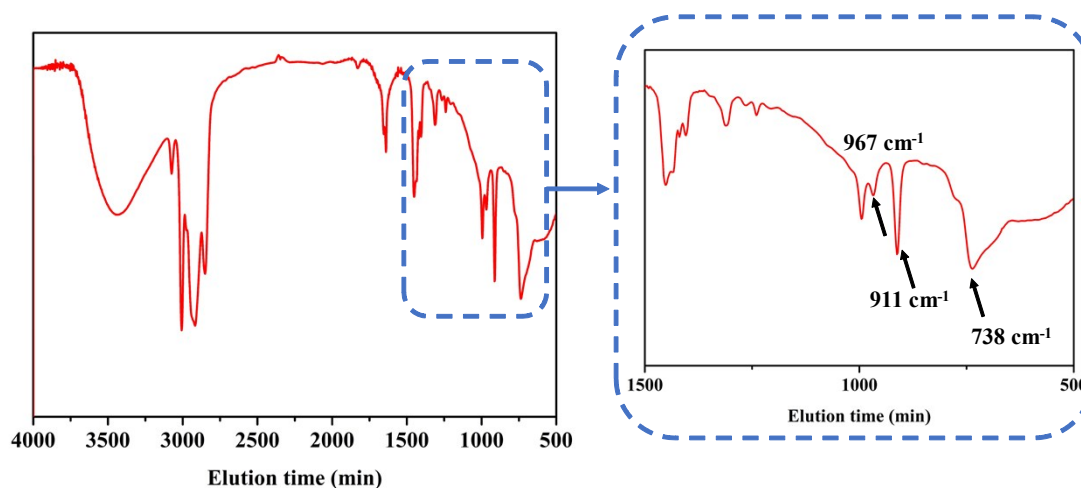
E-mail: [fengwang@qust.edu.cn](mailto:fengwang@qust.edu.cn); [hengliu@qust.edu.cn](mailto:hengliu@qust.edu.cn);

The microstructure of polybutadiene is calculated according to the previous report:

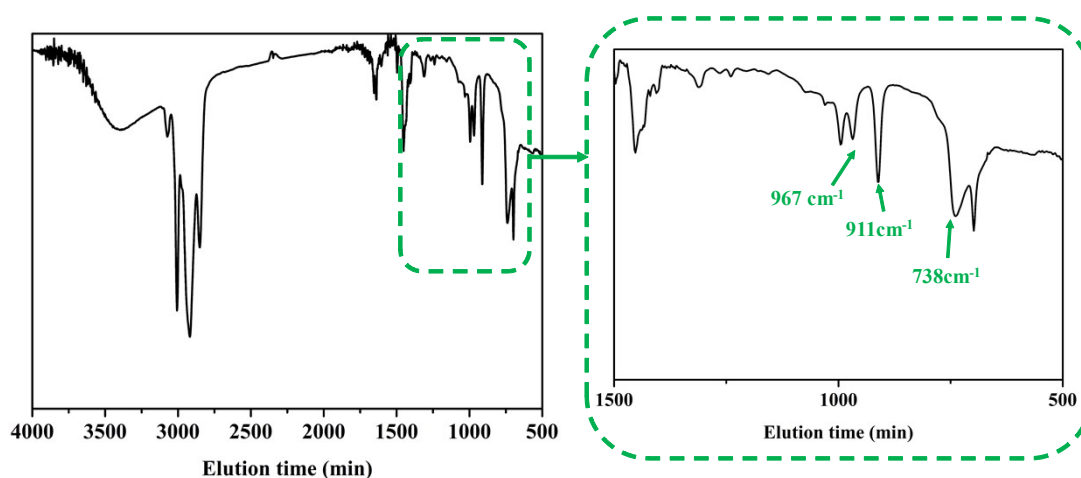
*Macromol. Chem. Phys.* **2013**, 214, 2172–2180.



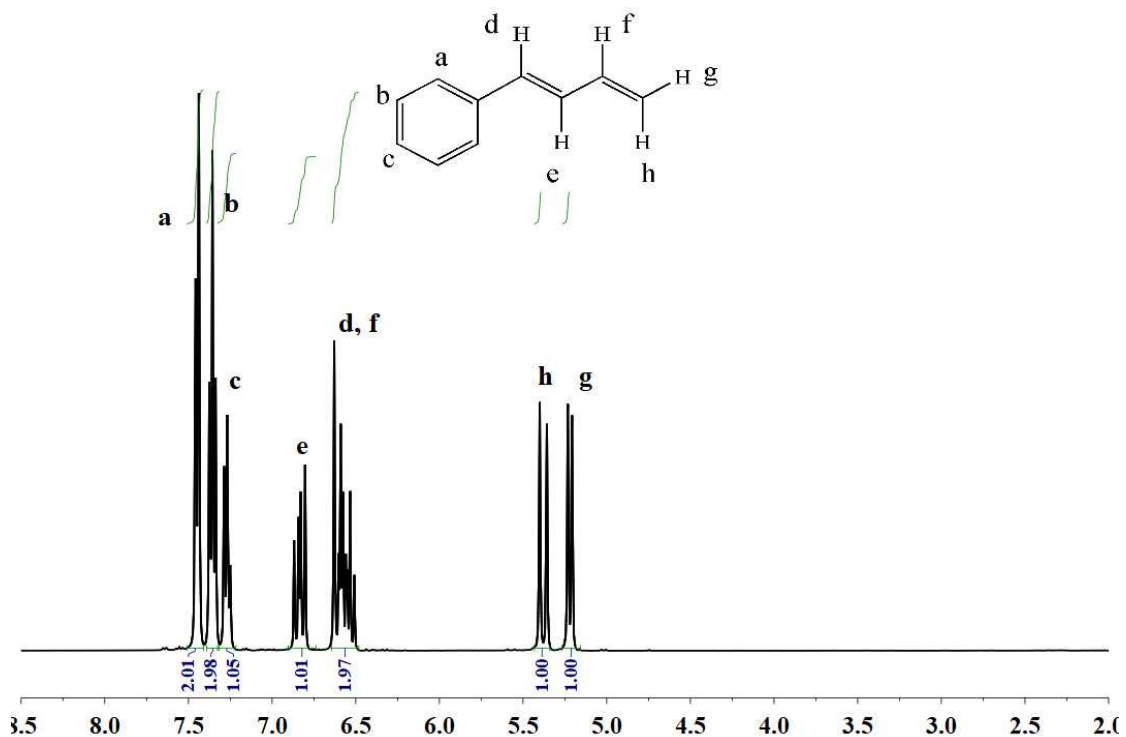
**Figure S1.** FTIR spectrum of sample run 8 (in Table 1), BD/PBD copolymer



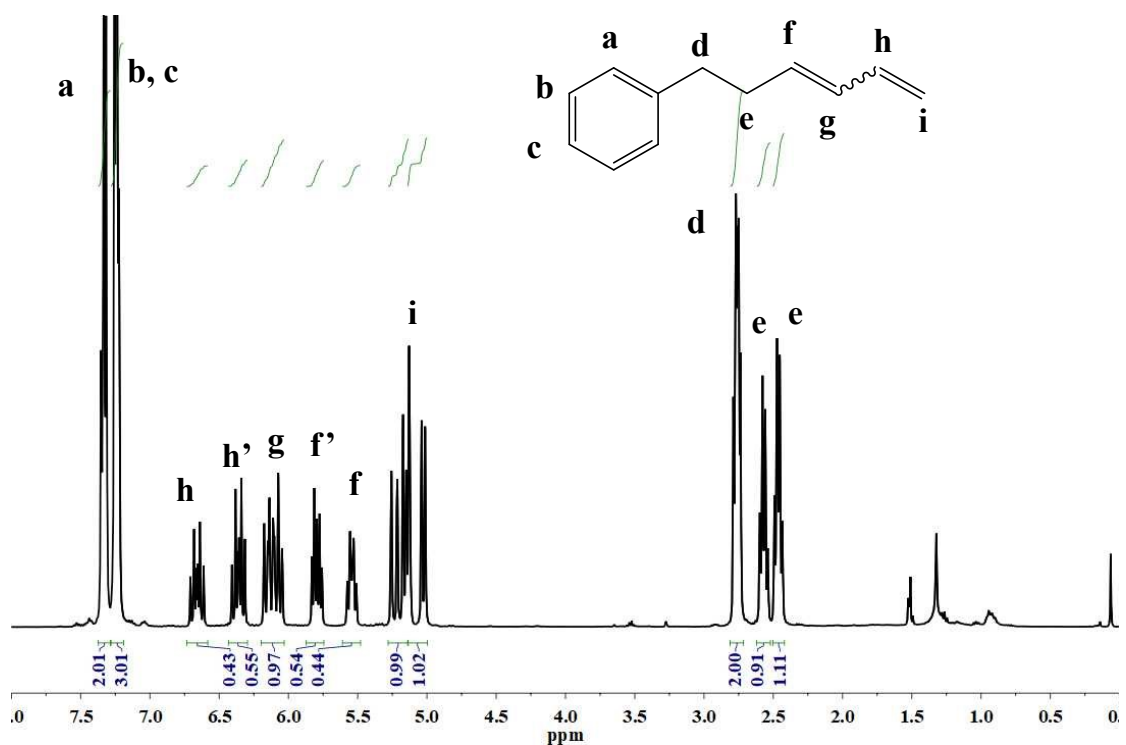
**Figure S2.** FTIR spectrum of sample run 11 (in Table 1), butadiene homopolymer



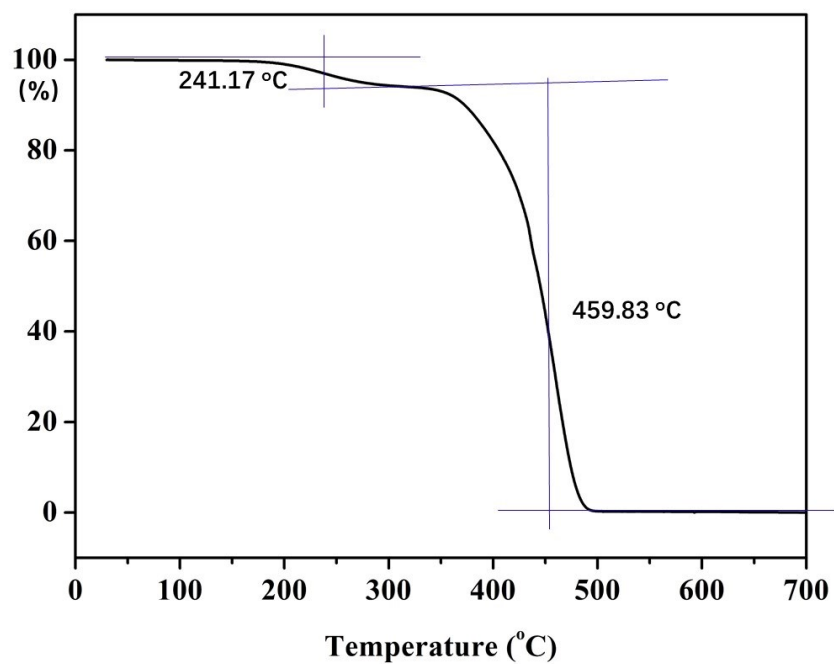
**Figure S3.** FTIR spectrum of sample run 18 (in Table 2), BD/PEBD copolymer



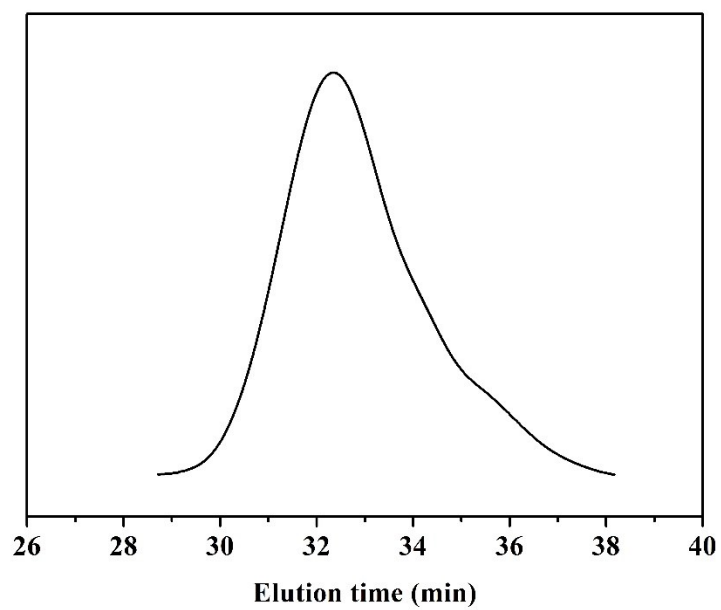
**Figure S4.** <sup>1</sup>H NMR spectrum of monomer 1-phenyl-1,3-butadiene (PBD) in CDCl<sub>3</sub>, 400M



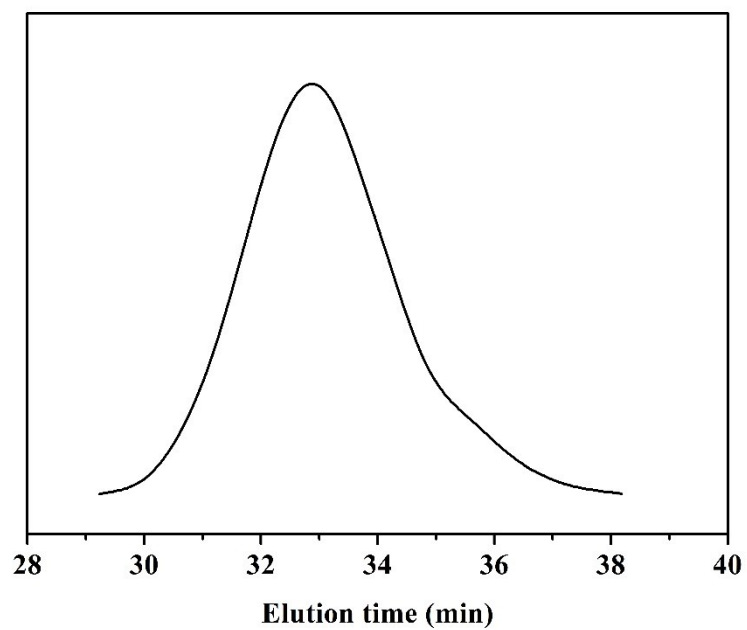
**Figure S5.** <sup>1</sup>H NMR spectrum of monomer 1-phenethyl-1,3-butadiene (PEBD) in CDCl<sub>3</sub>, 400M



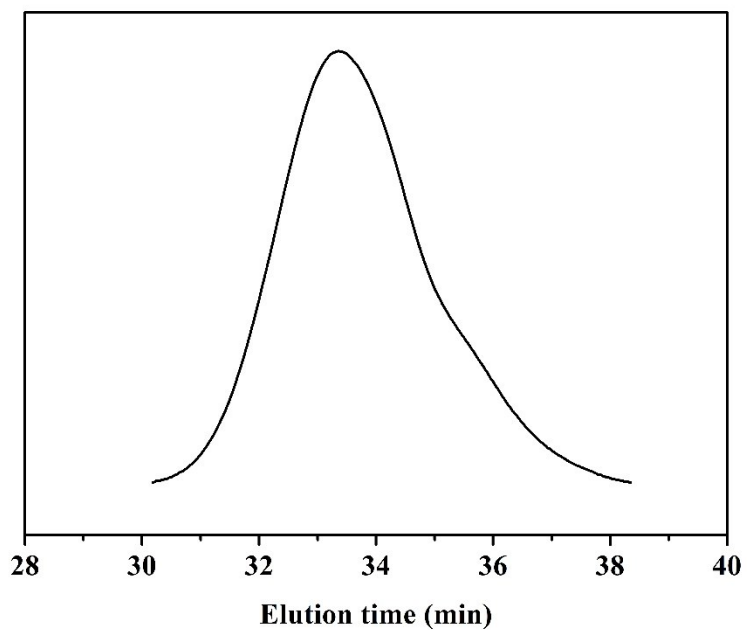
**Figure S6.** TGA curve for the sample of run 8, table 1.



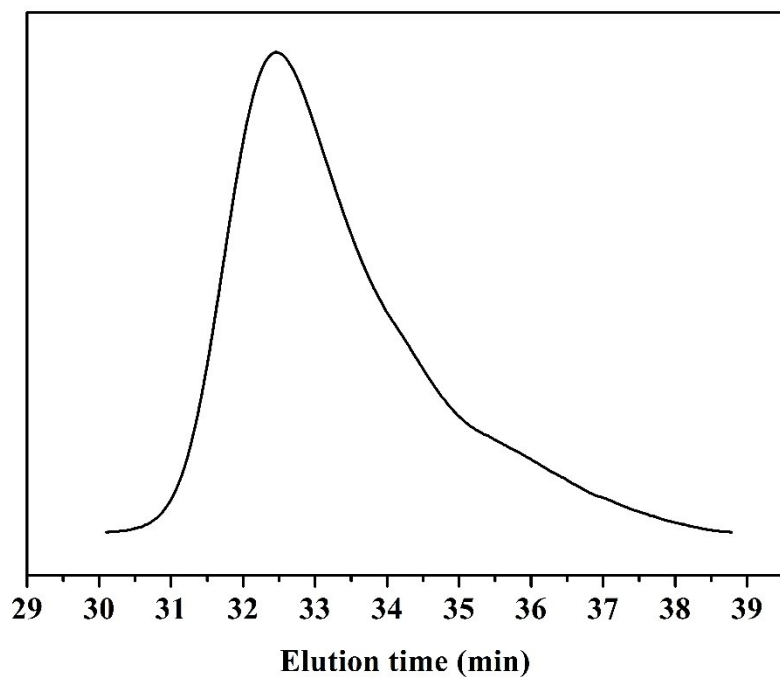
**Figure S7.** GPC profile of sample run 1(in table 1), BD/PBD copolymer



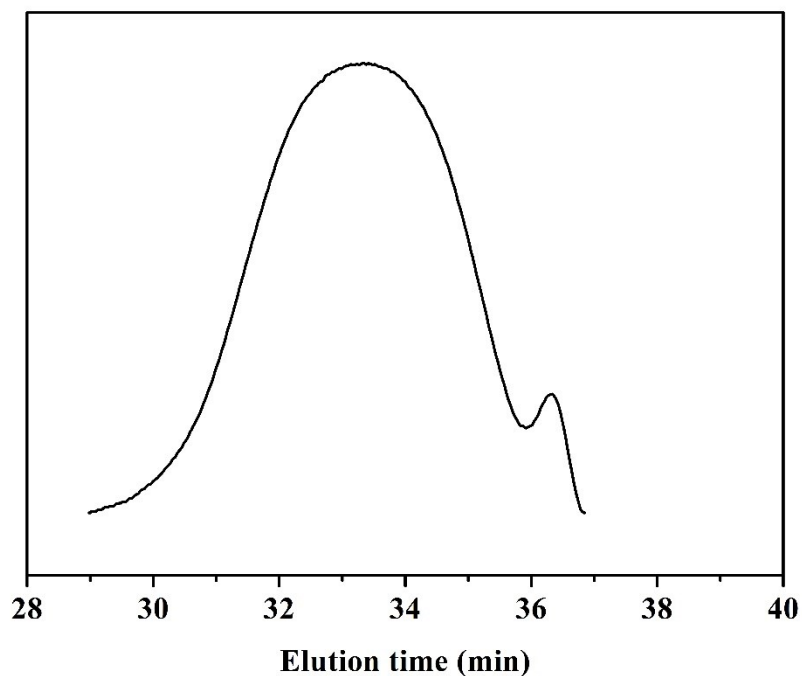
**Figure S8.** GPC profile of sample run 2 (in table 1), BD/PBD copolymer



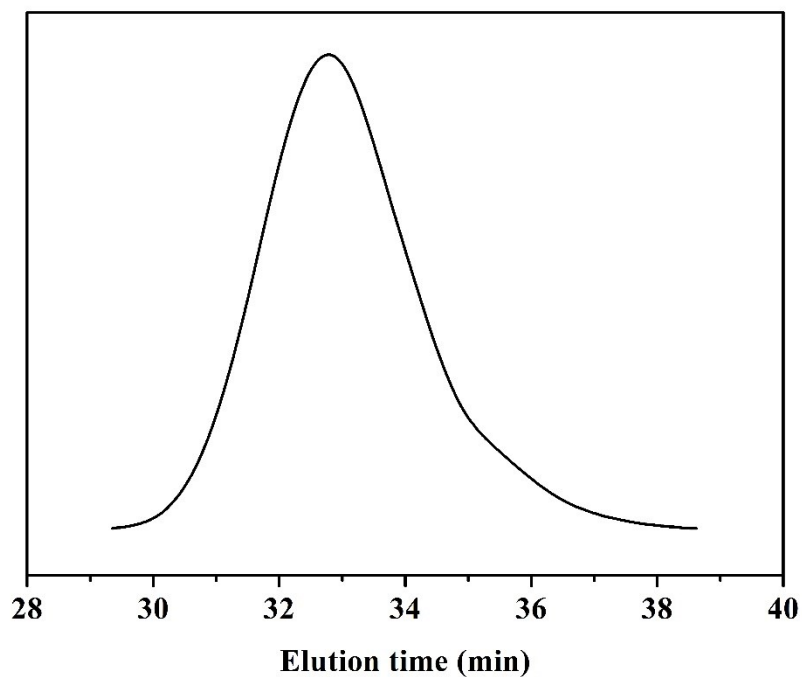
**Figure S9.** GPC profile of sample run 3 (in table 1), BD/PBD copolymer



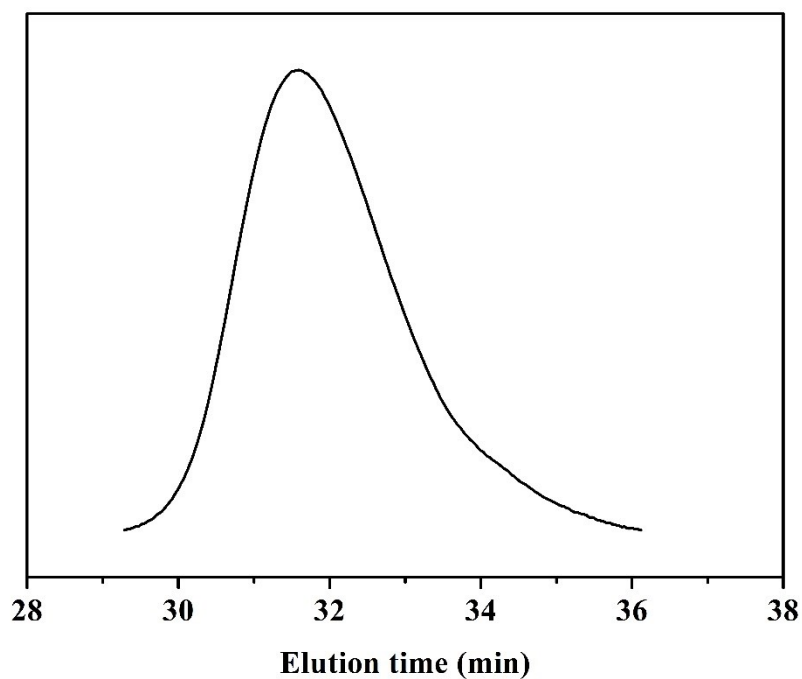
**Figure S10.** GPC profile of sample run 6 (in table 1), BD/PBD copolymer



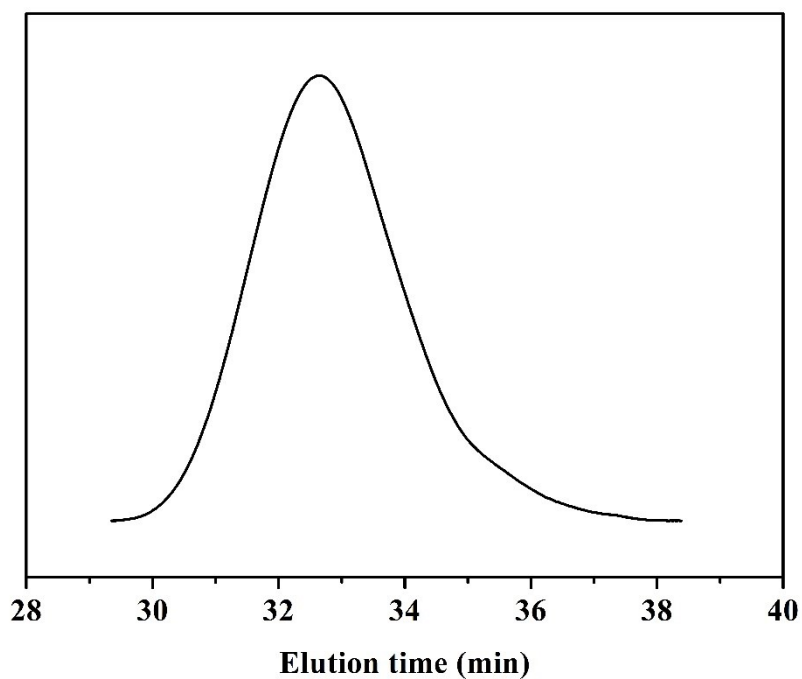
**Figure S11.** GPC profile of sample run 10 (in table 1), 1-phenyl-1,3-butadiene homopolymer



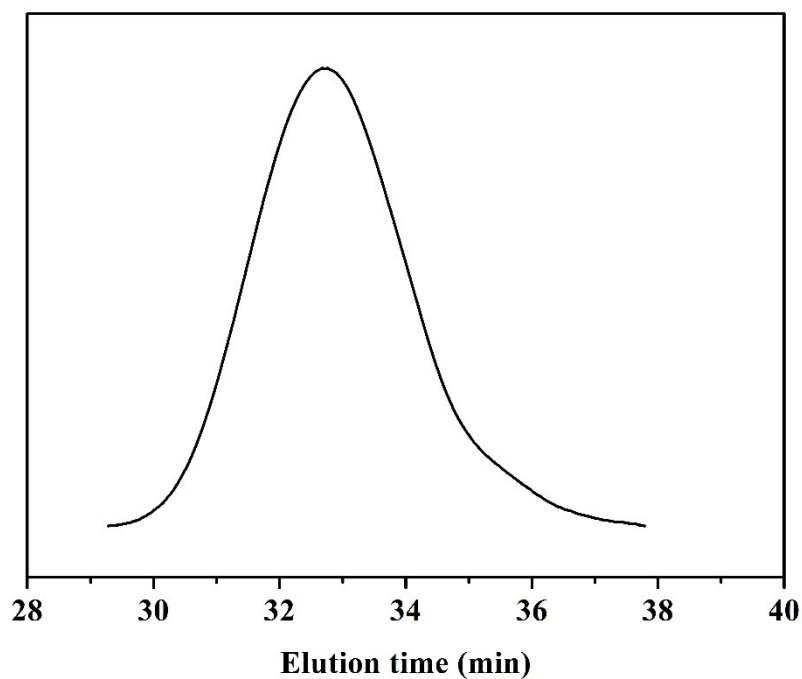
**Figure S12.** GPC profile of sample run 11 (in table 1), BD/PBD copolymer



**Figure S13.** GPC profile of sample run 16 (in table 2), BD/PEBD copolymer

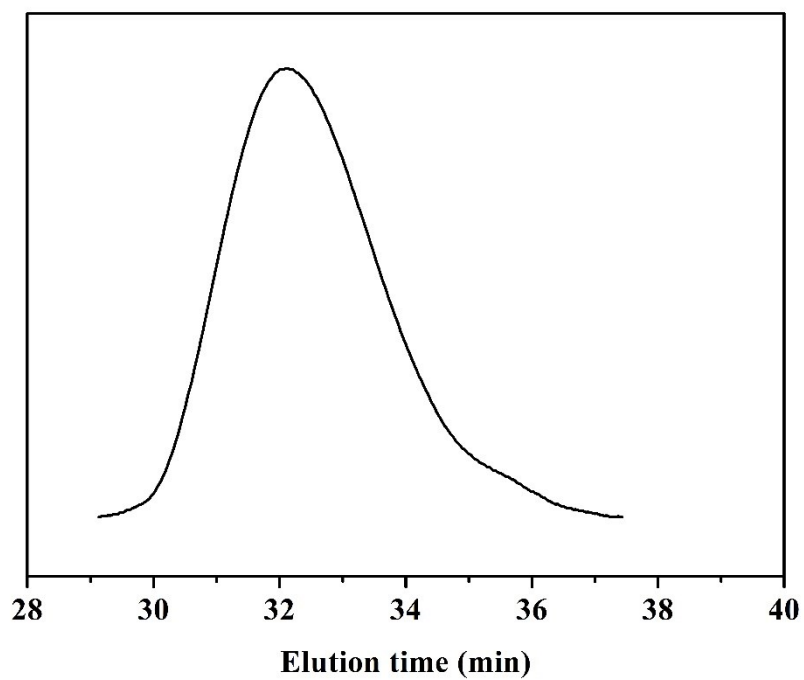


**Figure S14.** GPC profile of sample run 17 (in table 2), BD/PEBD copolymer

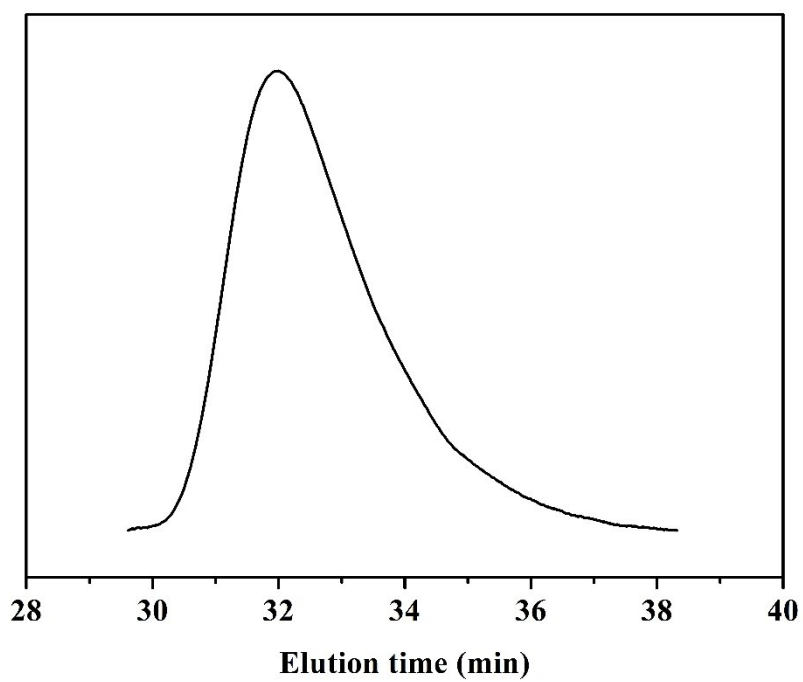


**Figure S15.** GPC profile of sample run 18 (in table 2), BD/PEBD copolymer

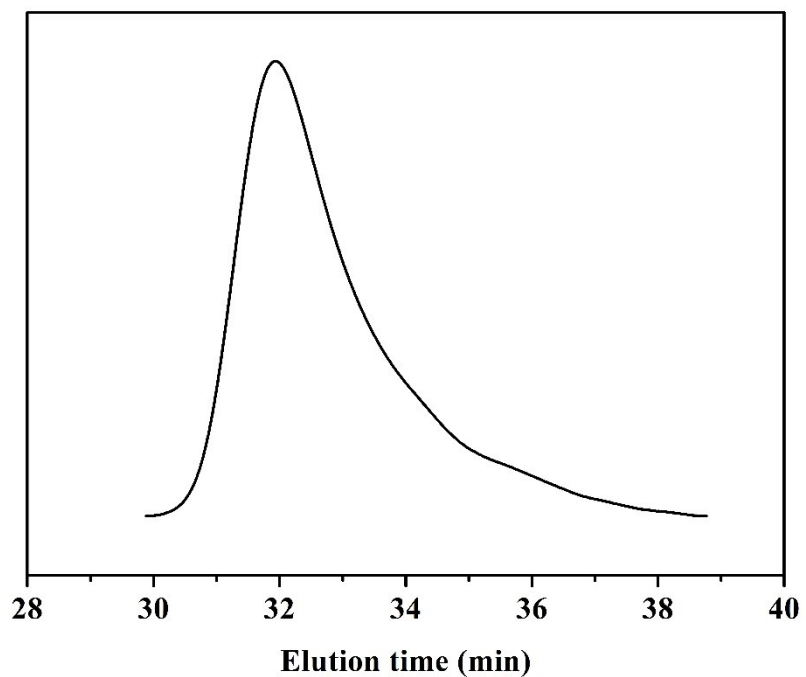




**Figure S16.** GPC profile of sample run 19 (in table 2), BD/PEBD copolymer

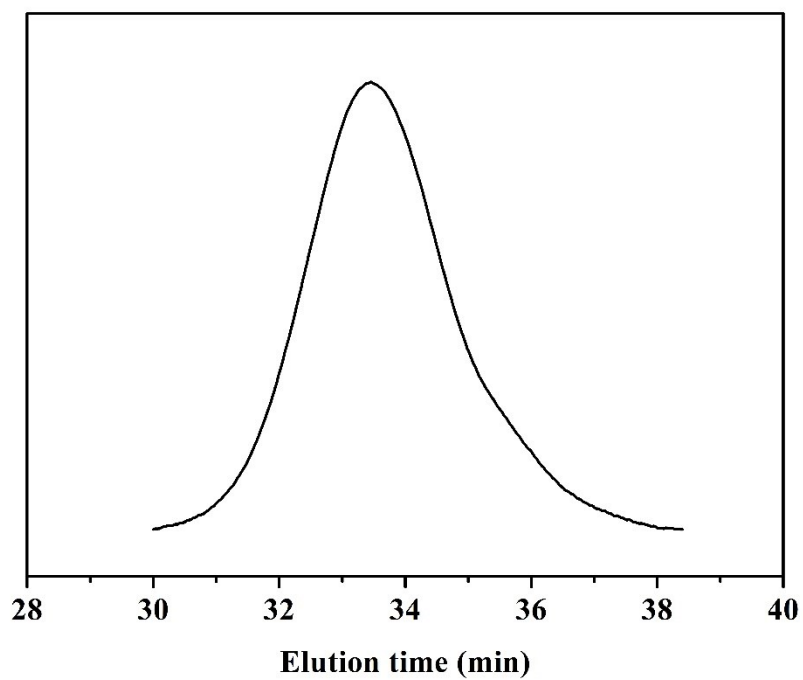


**Figure S17.** GPC profile of sample run 20 (in table 2), BD/PEBD copolymer

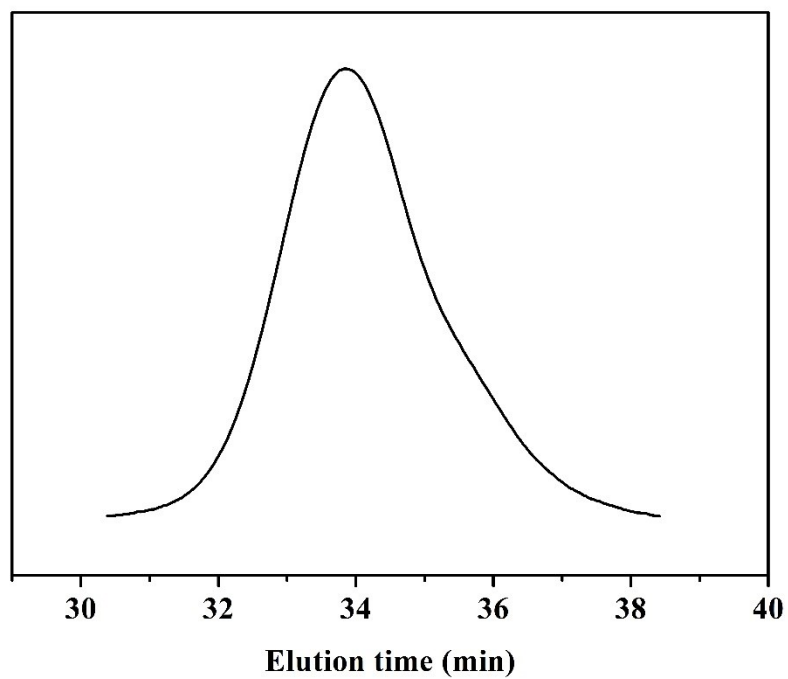


**Figure S18.** GPC profile of sample run 21 (in table 2), BD/PEBD copolymer

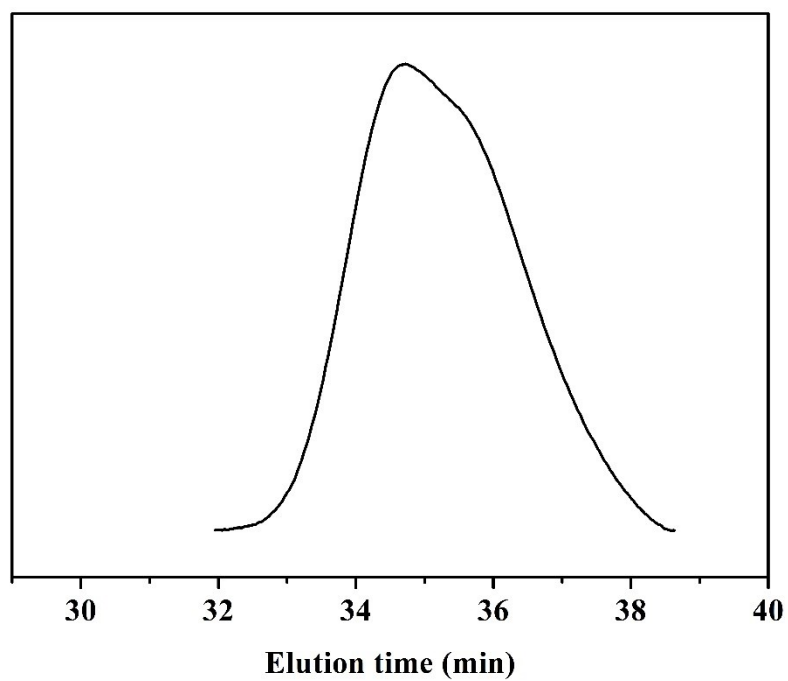
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**Figure S19.** GPC profile of sample run 22 (in table 2), BD/PEBD copolymer



**Figure S20.** GPC profile of sample run 23 (in table 2), BD/PEBD copolymer



**Figure S21.** GPC profile of sample run 24 (in table 2), BD/PEBD copolymer