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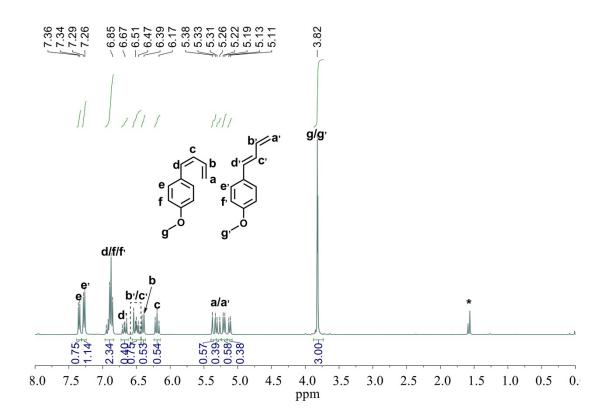


Figure S1. <sup>1</sup>H NMR spectra of polar comonomer a. (\*:water)

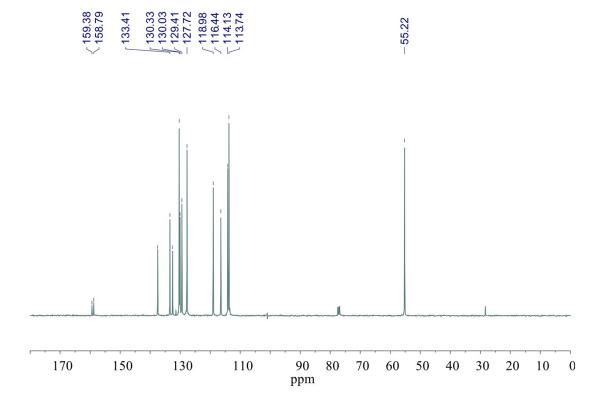
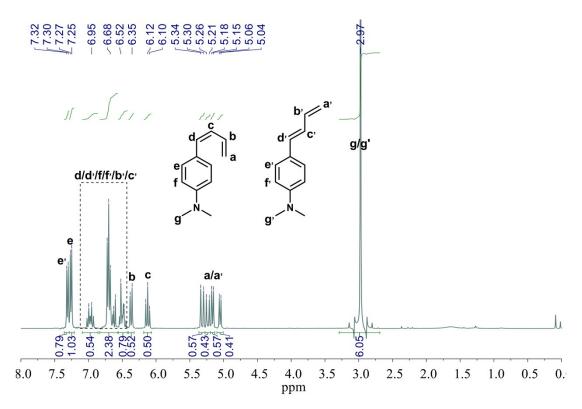
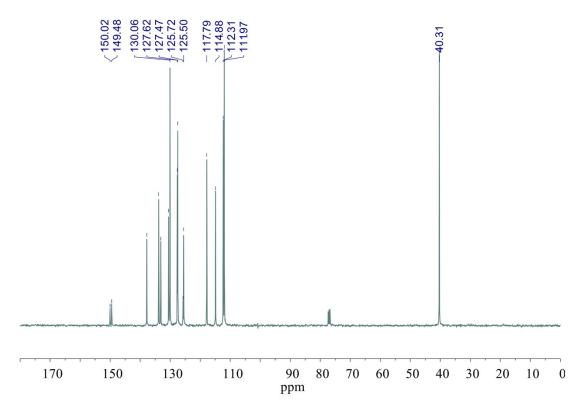


Figure S2. <sup>13</sup>C NMR spectra of polar comonomer a.



**Figure S3.** <sup>1</sup>H NMR spectra of polar comonomer **b**.



**Figure S4.** <sup>13</sup>C NMR spectra of polar comonomer **b**.

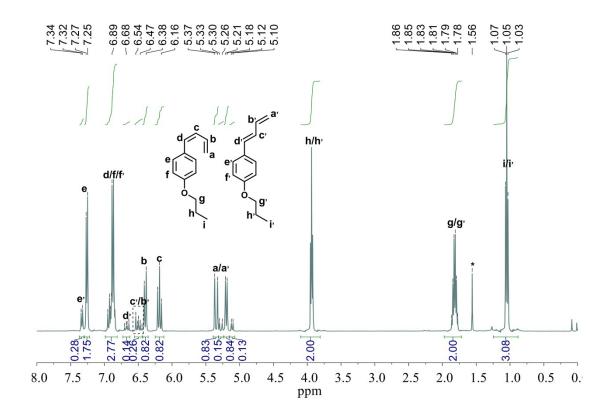
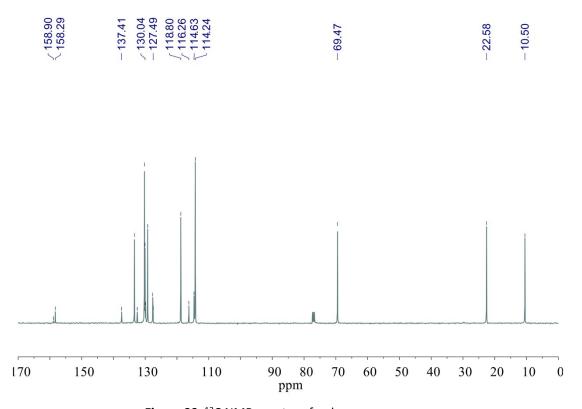


Figure S5. <sup>1</sup>H NMR spectra of polar comonomer c. (\*:water)



**Figure S6.** <sup>13</sup>C NMR spectra of polar comonomer **c**.

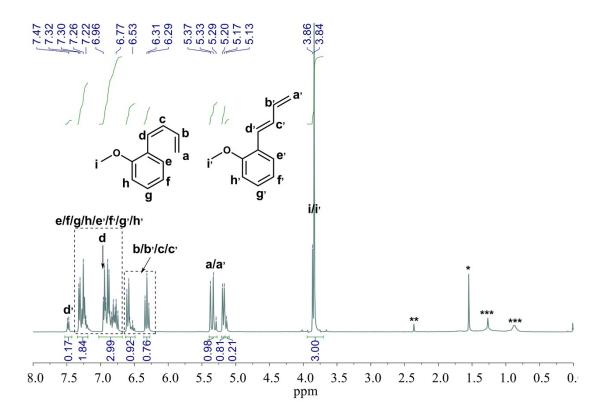


Figure S7.  $^1$ H NMR spectra of polar comonomer d.(\*:water;\*\*:toluene; \*\*\*:n-hexane )

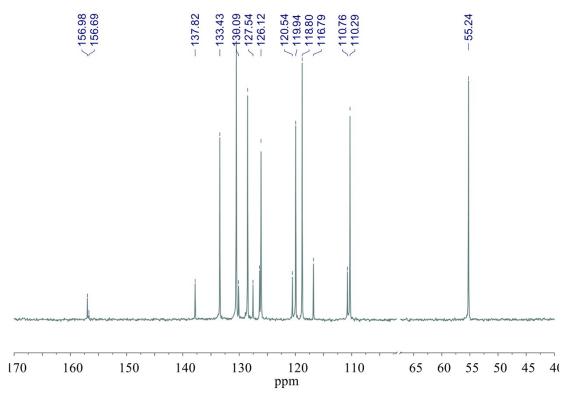
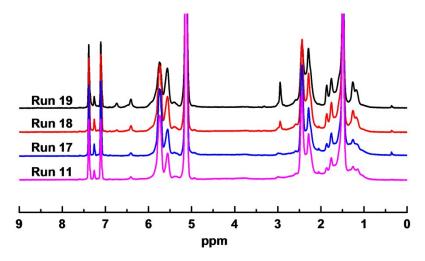
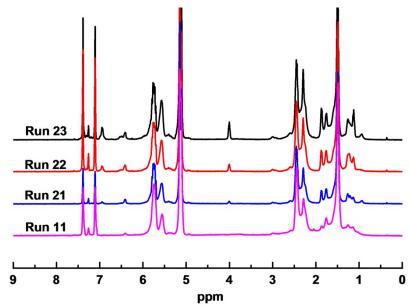


Figure S8. <sup>13</sup>C NMR spectra of polar comonomer **d**.



**Figure S9**. <sup>1</sup>H NMR spectra of the copolymers obtained from 1,3-butadiene and comonomer **b**.



**Figure S10**. <sup>1</sup>H NMR spectra of the copolymers obtained from 1,3-butadiene and comonomer **c**.

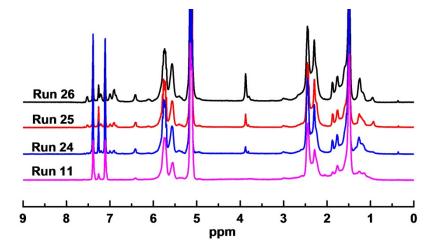


Figure S11. <sup>1</sup>H NMR spectra of the copolymers obtained from 1,3-butadiene and comonomer d.

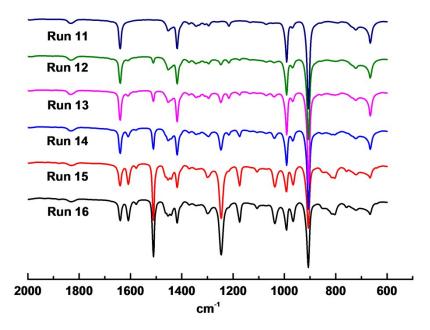
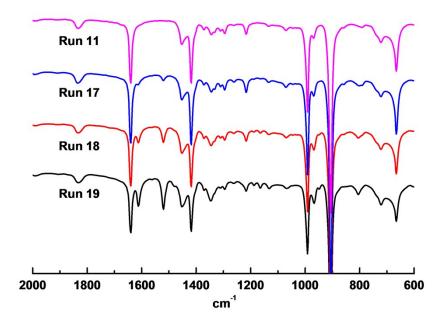


Figure S12. FTIR spectra of the copolymers obtained from 1,3-butadiene and comonomer a.



**Figure S13.** FTIR spectra of the copolymers obtained from 1,3-butadiene and comonomer **b**.

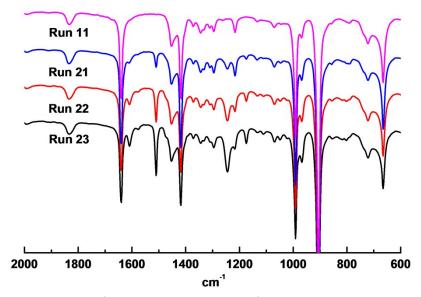


Figure S14. FTIR spectra of the copolymers obtained from 1,3-butadiene and comonomer c.

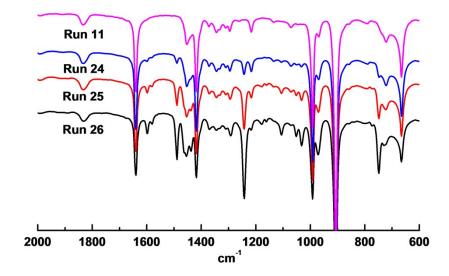


Figure S15. FTIR spectra of the copolymers obtained from 1,3-butadiene and comonomer d.