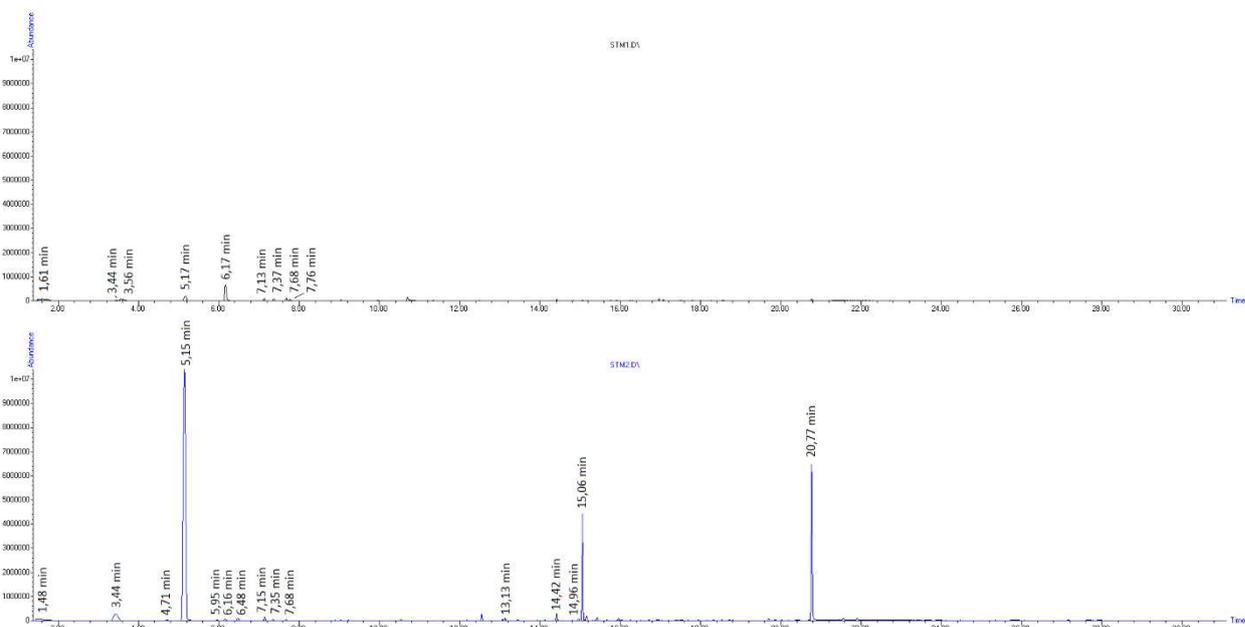
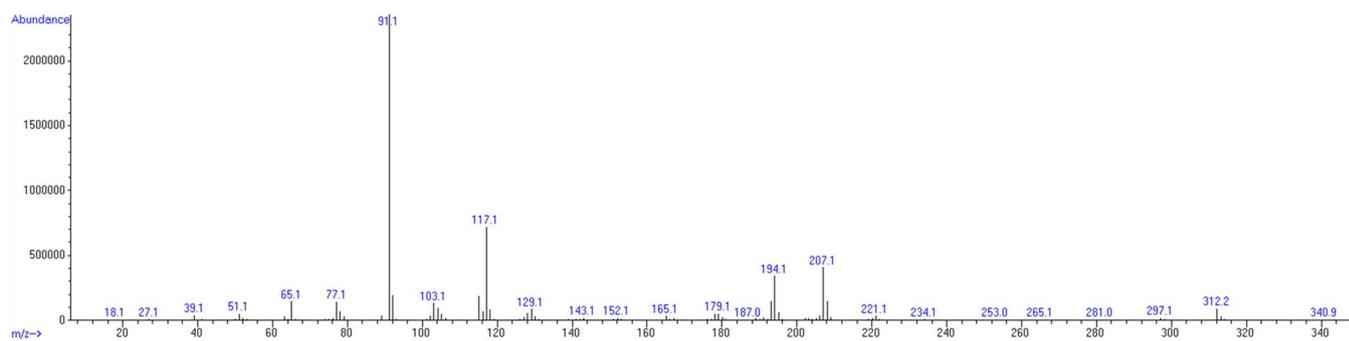


## Supplementary Information (SI)



**Figure S1.** Gas chromatograms of pyrolysis gases released upon the decomposition of PS at 260 °C (black) and 415 °C (blue).



**Figure S2.** Mass spectrum of gases evolved as a result of PS pyrolysis at 415 °C (20.769 min).

Figure S3. Mass spectrum of gases formed as a result of poly(*S-co*-DEpVBP) pyrolysis at 355 °C (15.76 min).

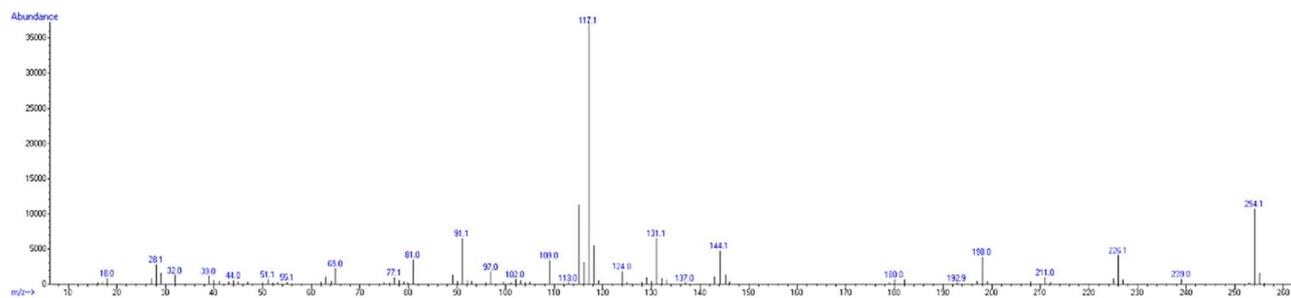
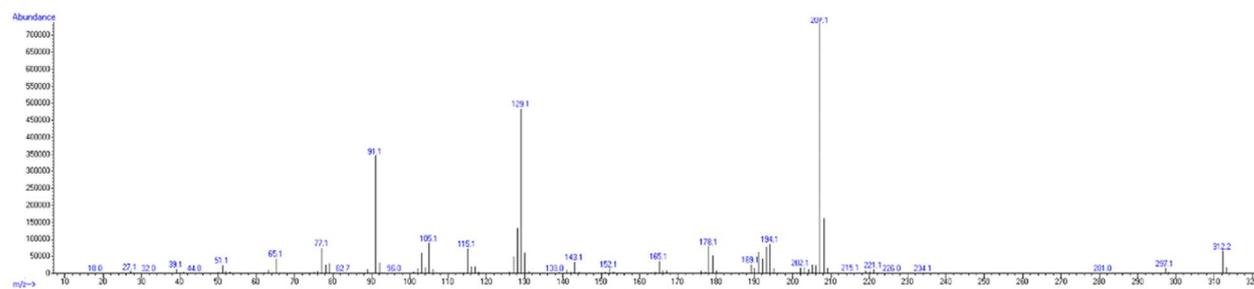
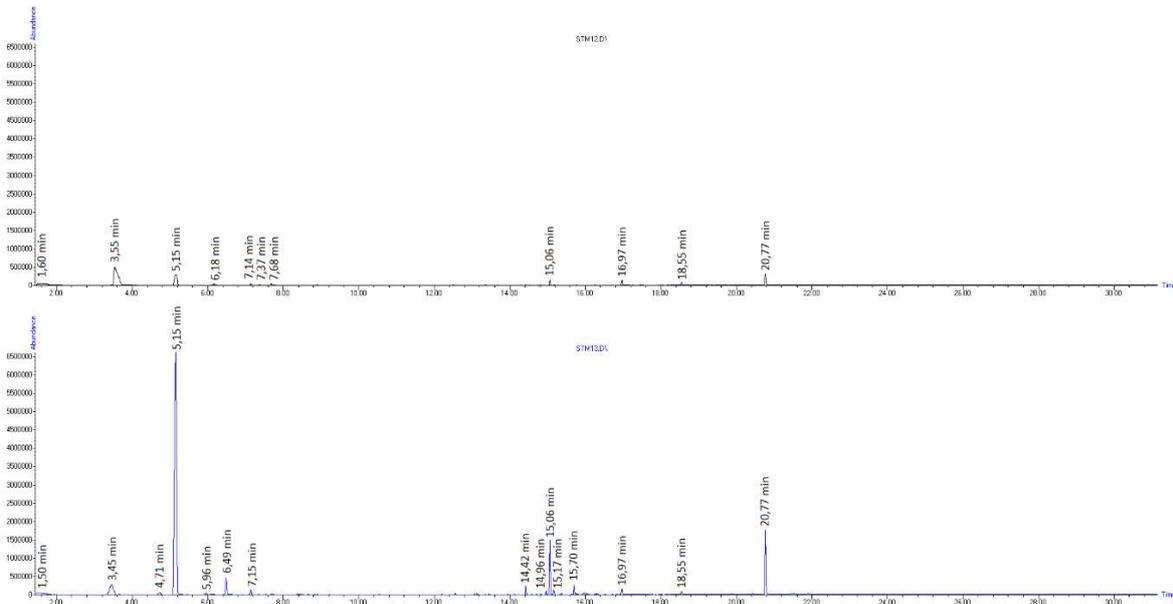
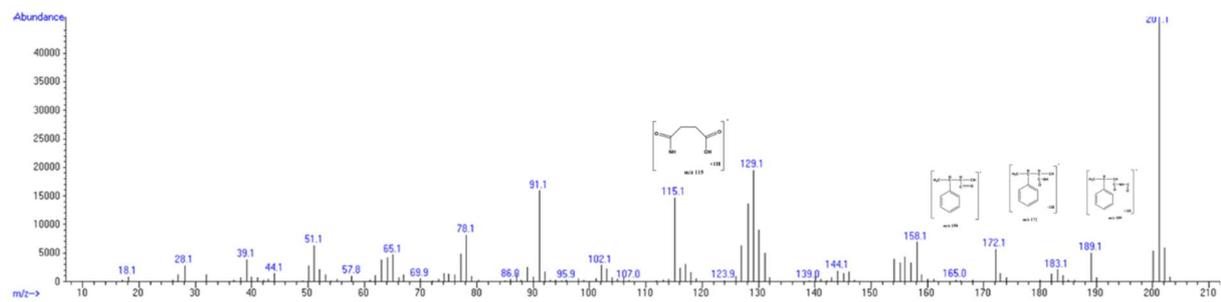


Figure S4. Mass spectrum of gases formed as a result of poly(*S-co*-DEpVBP) pyrolysis at 445 °C (21.49 min).

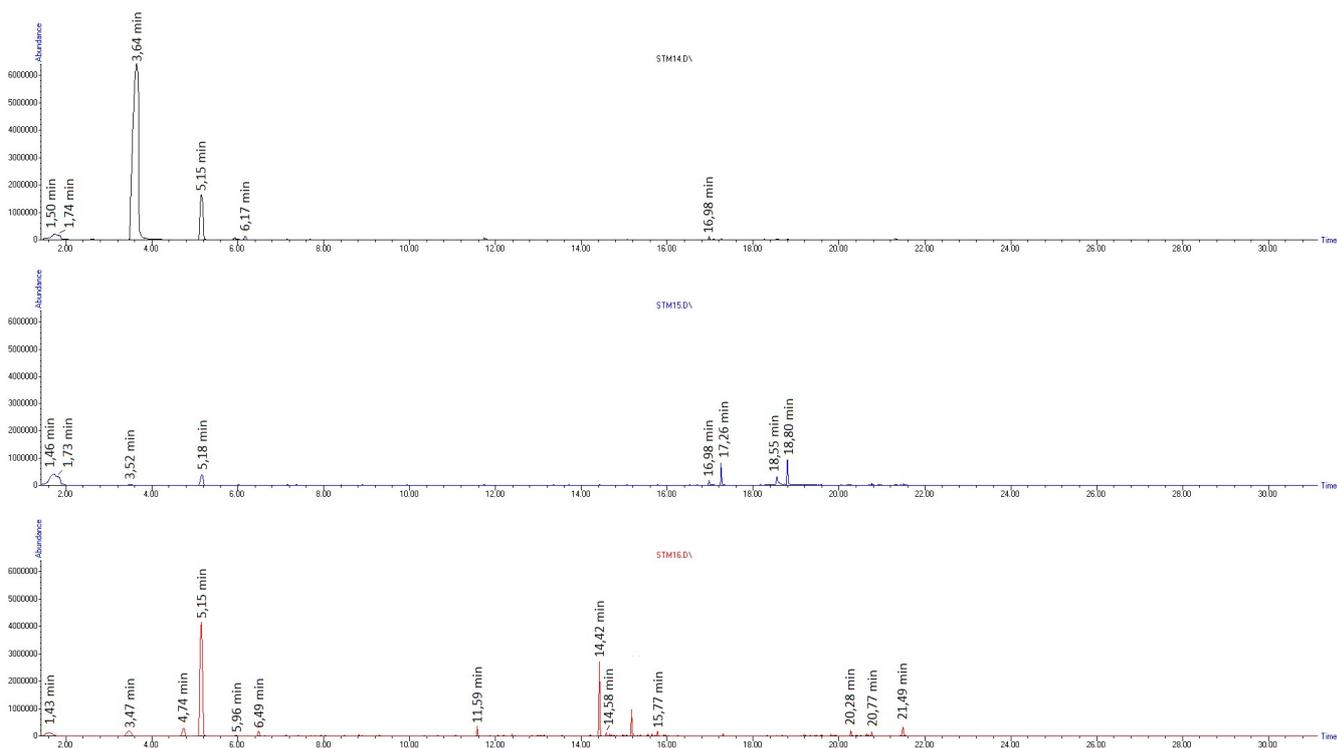




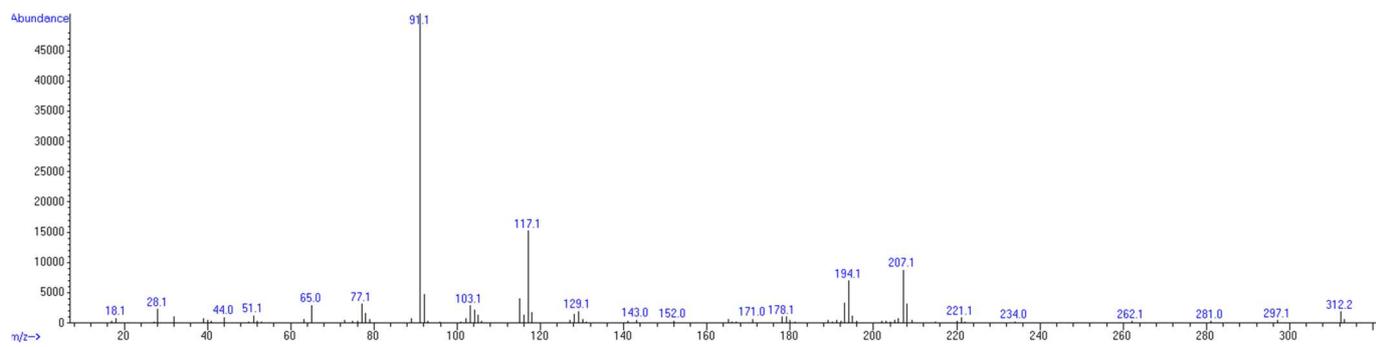
**Figure S5.** Gas chromatograms of pyrolysis gases released upon the decomposition of poly(*S-co-MI*) at 210 °C (black) and 420 °C (blue).



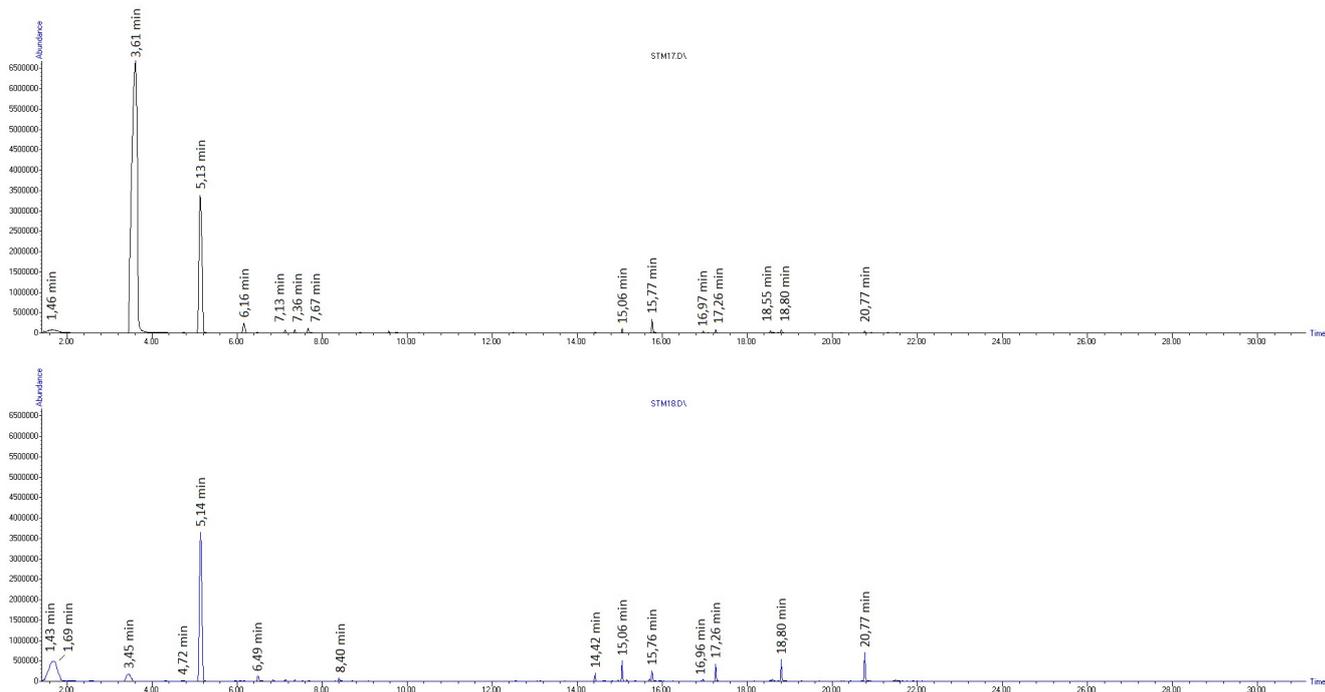
**Figure S6.** Mass spectrum of gases formed as a result of poly(*S-co-MI*) pyrolysis at 420 °C (15.698 min).



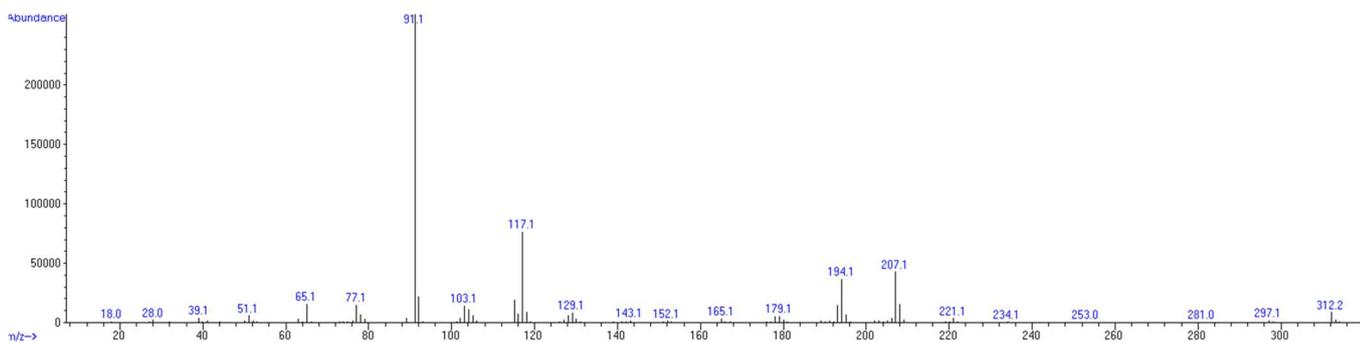
**Figure S7.** Gas chromatograms of pyrolysis gases evolved during the decomposition of poly(*S-ter*-DEAMP-*ter*-MI) at 240 °C (black), 320 °C (blue) and 375 °C (red).



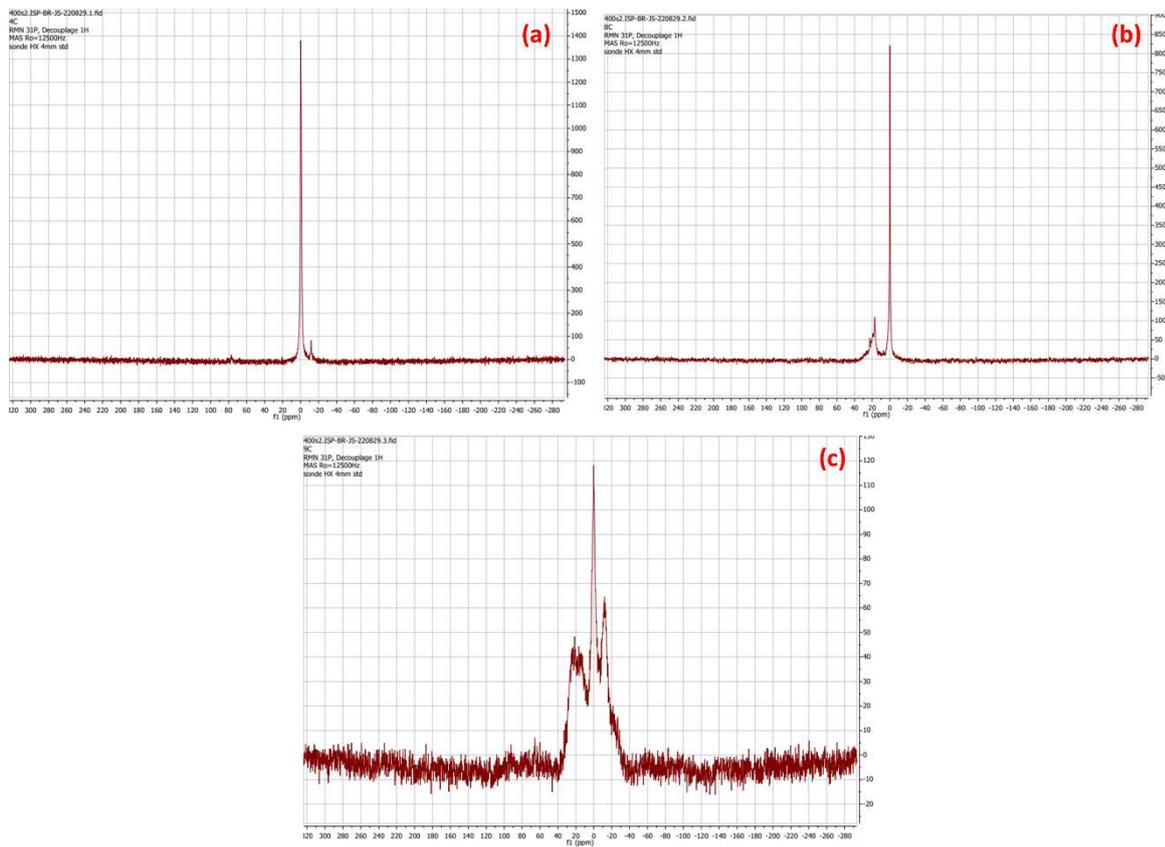
**Figure S8.** Mass spectrum of gases evolved as a result of poly(*S-ter*-DEAMP-*ter*-MI) pyrolysis at 375 °C (20.763 min).



**Figure S9.** Gas chromatograms of pyrolysis gases evolved during the decomposition of poly(*S-ter-DEpVBP-ter-MI*) at 270 °C (black) and 375 °C (blue).



**Figure S10.** Mass spectrum of gases evolved as a result of poly(*S-ter-DEpVBP-ter-MI*) pyrolysis at 375 °C (20.763 min).



**Figure S11.** The solid-state  $^{31}\text{P}$  NMR spectra of char residues obtained from the samples of poly(*S-co*-ADEPMAE) (a), poly(*S-ter*-DEAMP-*ter*-MI) (b), poly(*S-ter*-DEpVBP-*ter*-MI) (c).