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Supplementary Materials

One-Pot Synthesis of Hyperbranched Polyurethane-Triazoles with Controlled Structural, Molecular Weight and Hydrodynamic Characteristics

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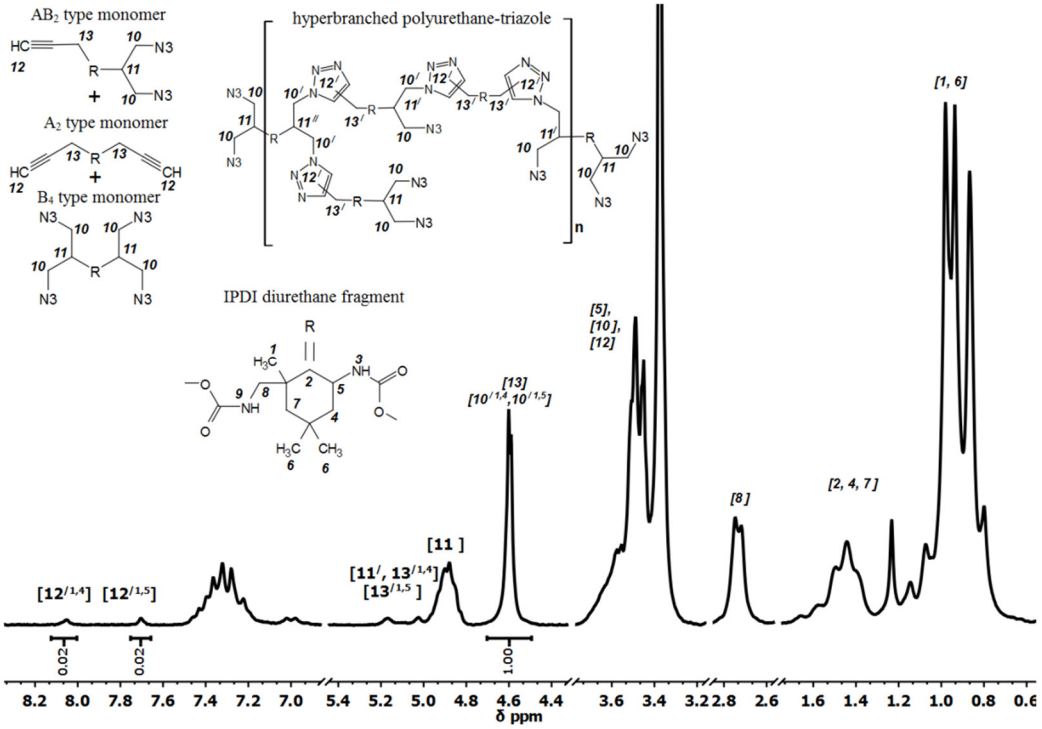

Figure S1. ^{1}H NMR spectra in DMSO-d6 of AB_2+A_2+B_4 monomers mixture synthesized at ratio $[NCO]_0/[OH]_0 = 1.7$.

Figure S1 shows typical ^{1}H NMR spectrum of AB_2+A_2+B_4 mixture, obtained by ratio $[NCO]_0/[OH]_0 = 1.7$ after storage for seven days.

Due to overlap of signals, calculation of ethinyl groups conversion is difficult. It can be carried out assuming the next:

The signals by 4.71 – 4.51 ppm (13) can be assigned to CH_2 group by non-reacted ethinyl groups of AB_2 and A_2 type monomers. The strong signal (13) overlap the signals ($10'^{1,4}$, $10'^{1,5}$) of CH_2 group by N atom in formed 1,4- and 1,5-triazoles (see ^{1}H NMR of polymer**, Figure 7)**. From synthesis it is obviously that integral intensity of signals ($10'^{1,4}$, $10'^{1,5}$) should be equal to integral intensity of signals ($13'^{1,4}$, $13'^{1,5}$) of CH_2 by ethinyl groups reacted in AAC. Thus, the starting amount of ethinyl group will be proportional

to half of total integral intensity of signal with chemical shift 4.71 – 4.51 ppm (1 proton of CH group (12) correspond to 2 protons of CH_2 groups (13))

Protons of CH groups in triazoles has two clear resolved signals ($12'^{1,4}$, $12'^{1,5}$) from 1,4- and 1,5-disubstituted derivatives at 8.20 – 7.99 ppm and 7.79 – 7.64 ppm, respectively. The amount of reacted ethinyl groups will be proportional to sum of integral intensities of signals by 8.20 – 7.99 ppm and 7.79 – 7.64 ppm.

Based on this, we calculated the conversion of ethinyl groups in mixture of AB_2+A_2+B_4 monomers is about 8%.