Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

Hyperbranched pyridylphenylene polymers based on the first generation dendrimer as a multifunctional monomer

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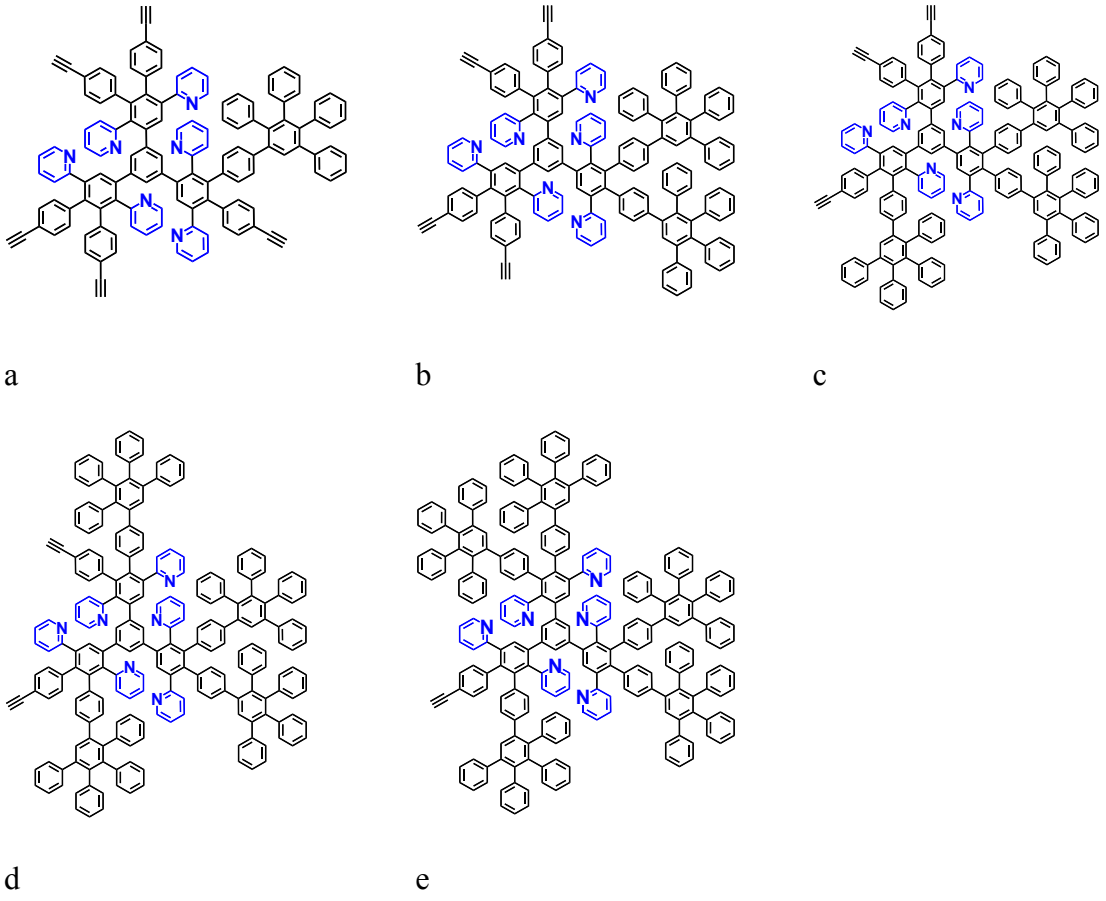
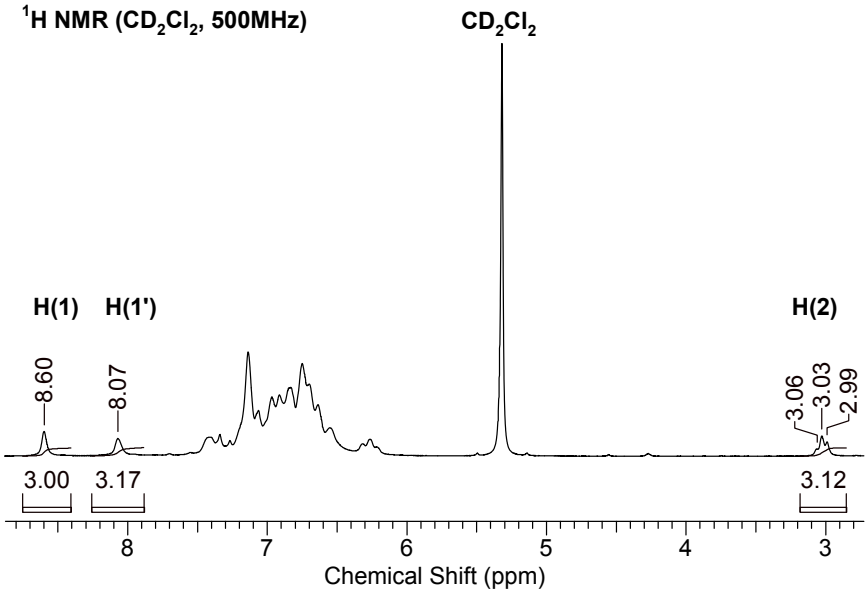


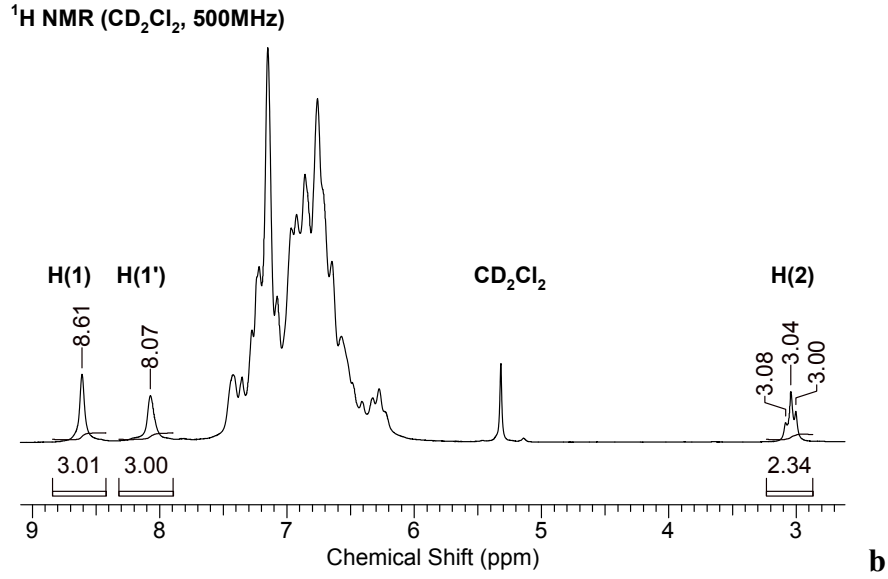
a b c

d e

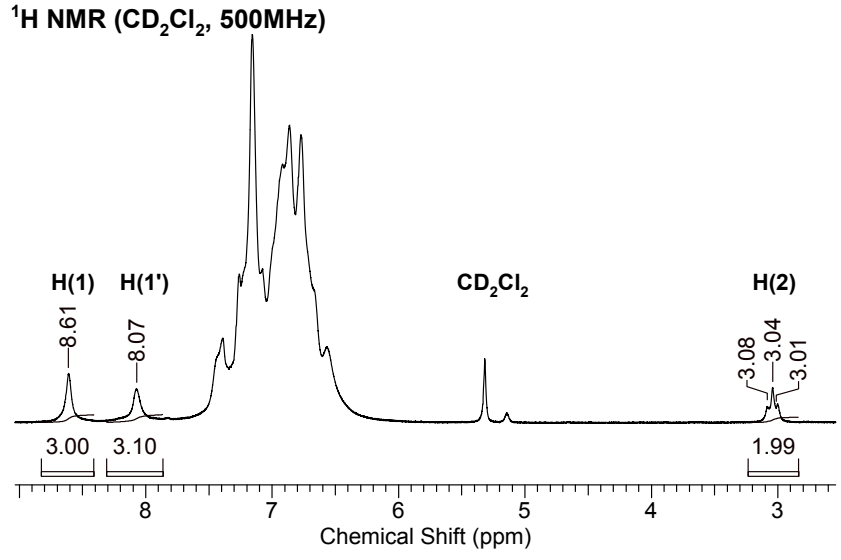
Figure S1.Model compounds



a



b



c

Figure S2. ^{1}H NMR spectra of polymers 13 (a), 10 (b), and 7 (c).

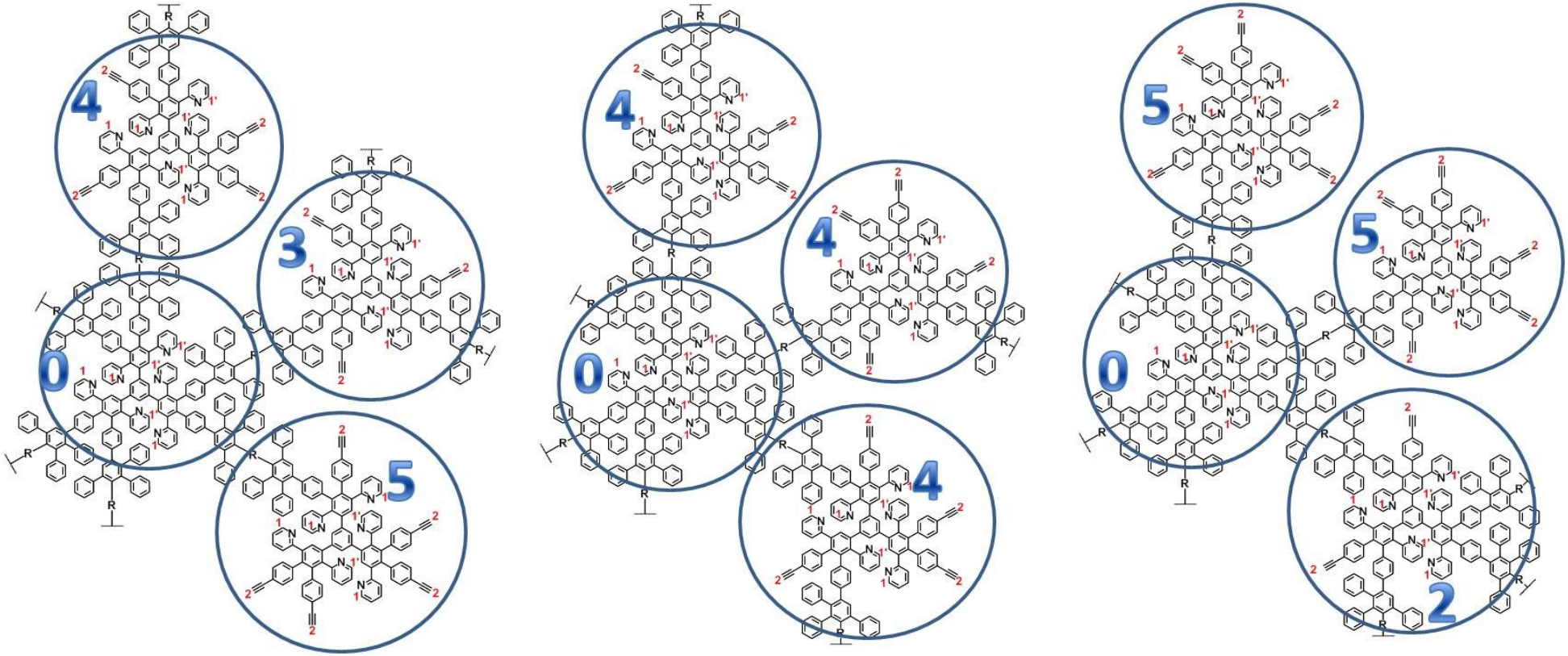


Figure S3. Proposed structures of the repeating unit of polymer 13.

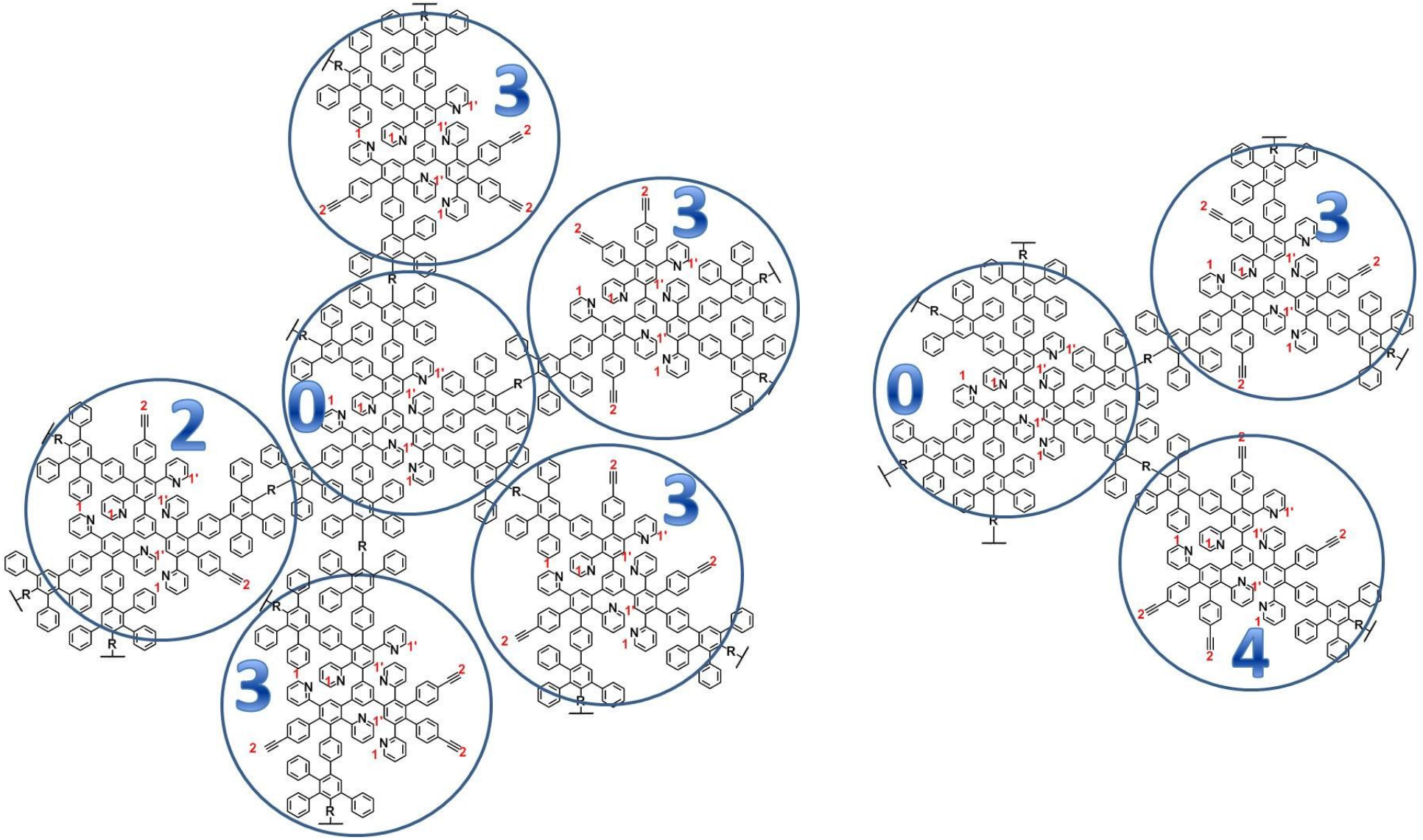


Figure S4. Proposed structures of the repeating unit of polymer 10.

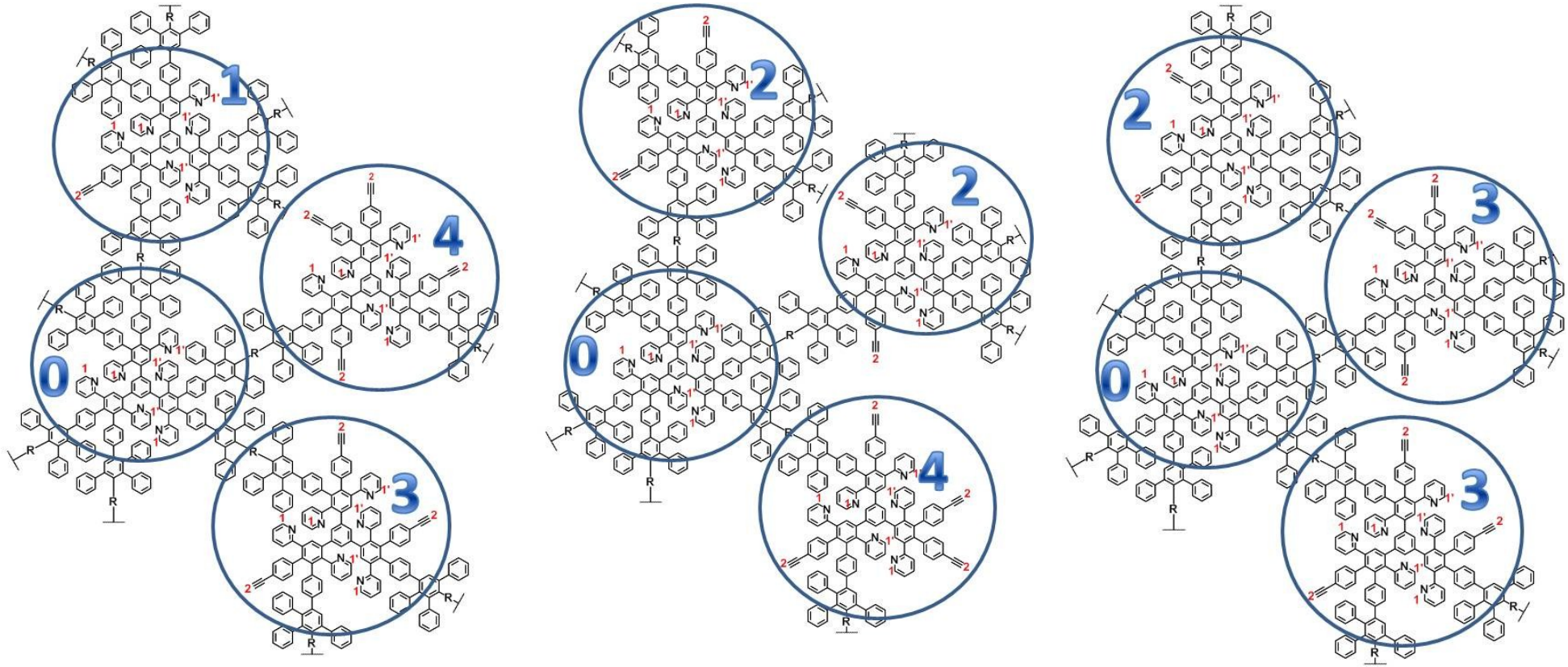


Figure S5. Proposed structures of the repeating unit of polymer **7**.

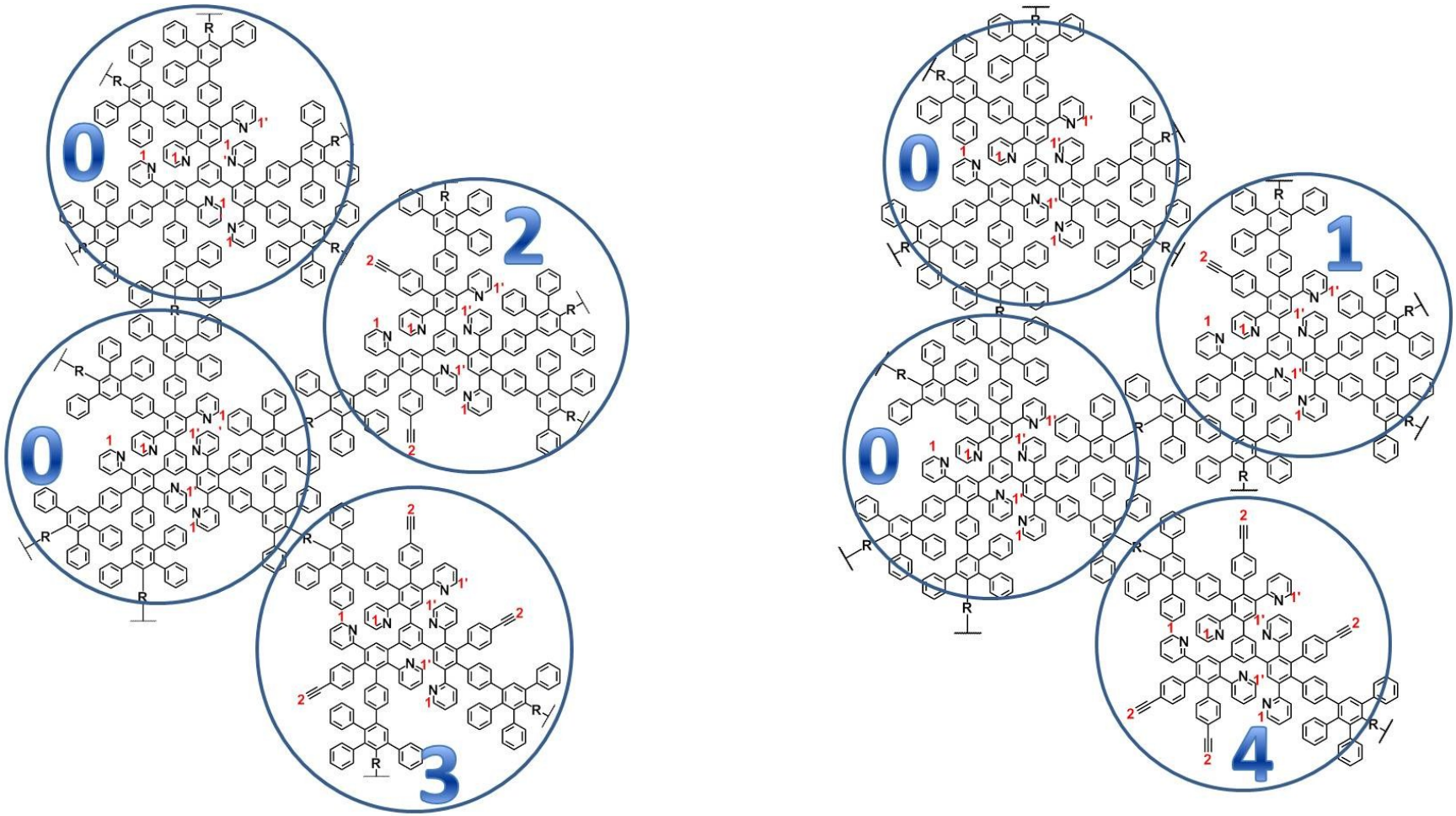


Figure S6. Proposed structures of the repeating unit of polymer **4**.

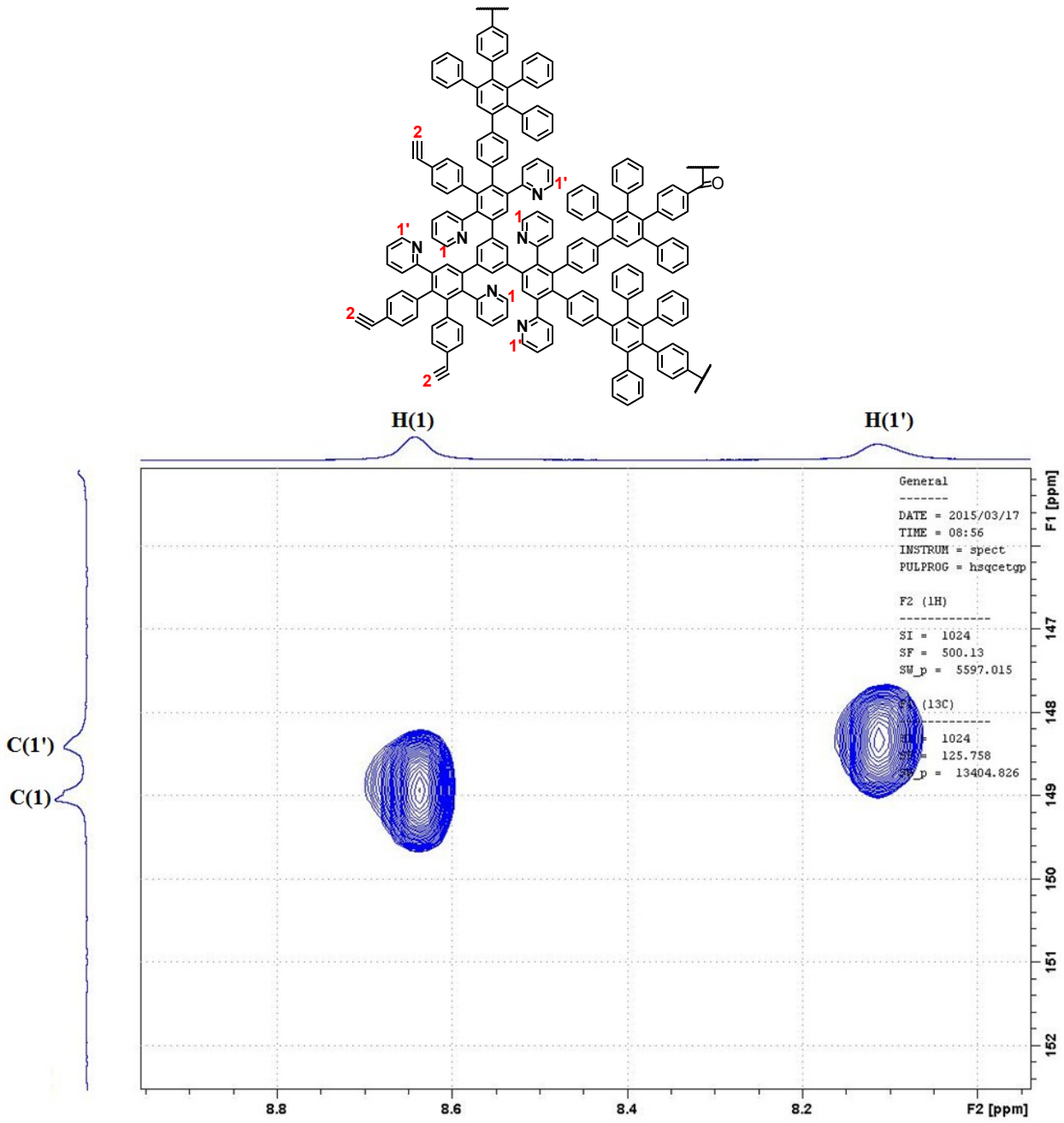


Figure S7.2D HSQC spectrum (pyridine area) and the proposed fragment of polymer 25 corresponding to the spectrum

The H(1) and H(1')signals of α-protons of nonequivalent pyridine moieties of the polymer at 8.61 and 8.08 ppm correspond to the correlation signals at 149.6 ppm[C(1)]and 148.9 [C(1')]ppm,respectively,in the 2D HSQC spectra(Figure S7).

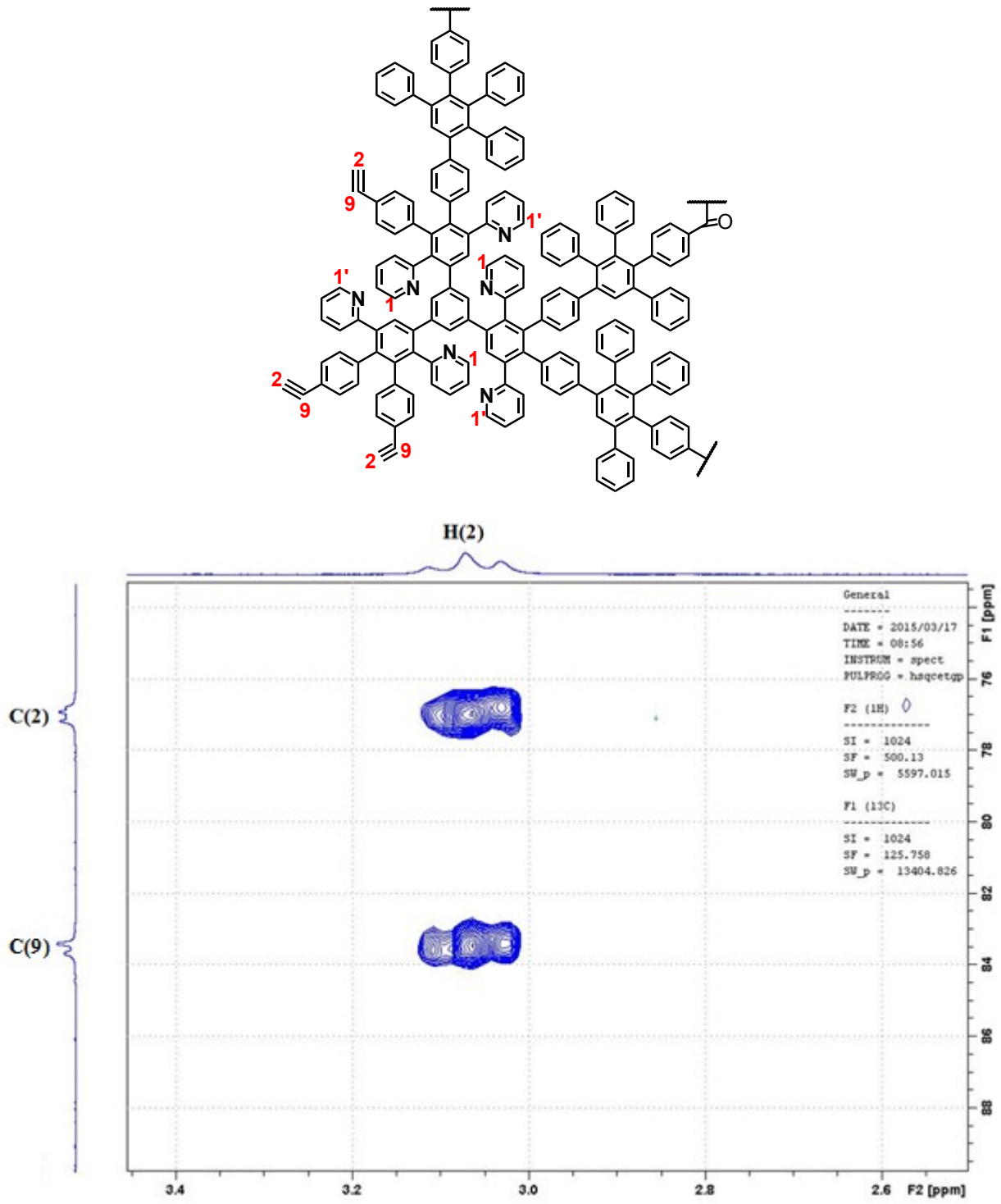


Figure S8.2D HSQC spectrum (acetylene area) and the proposed fragment of polymer 25 corresponding to the spectrum

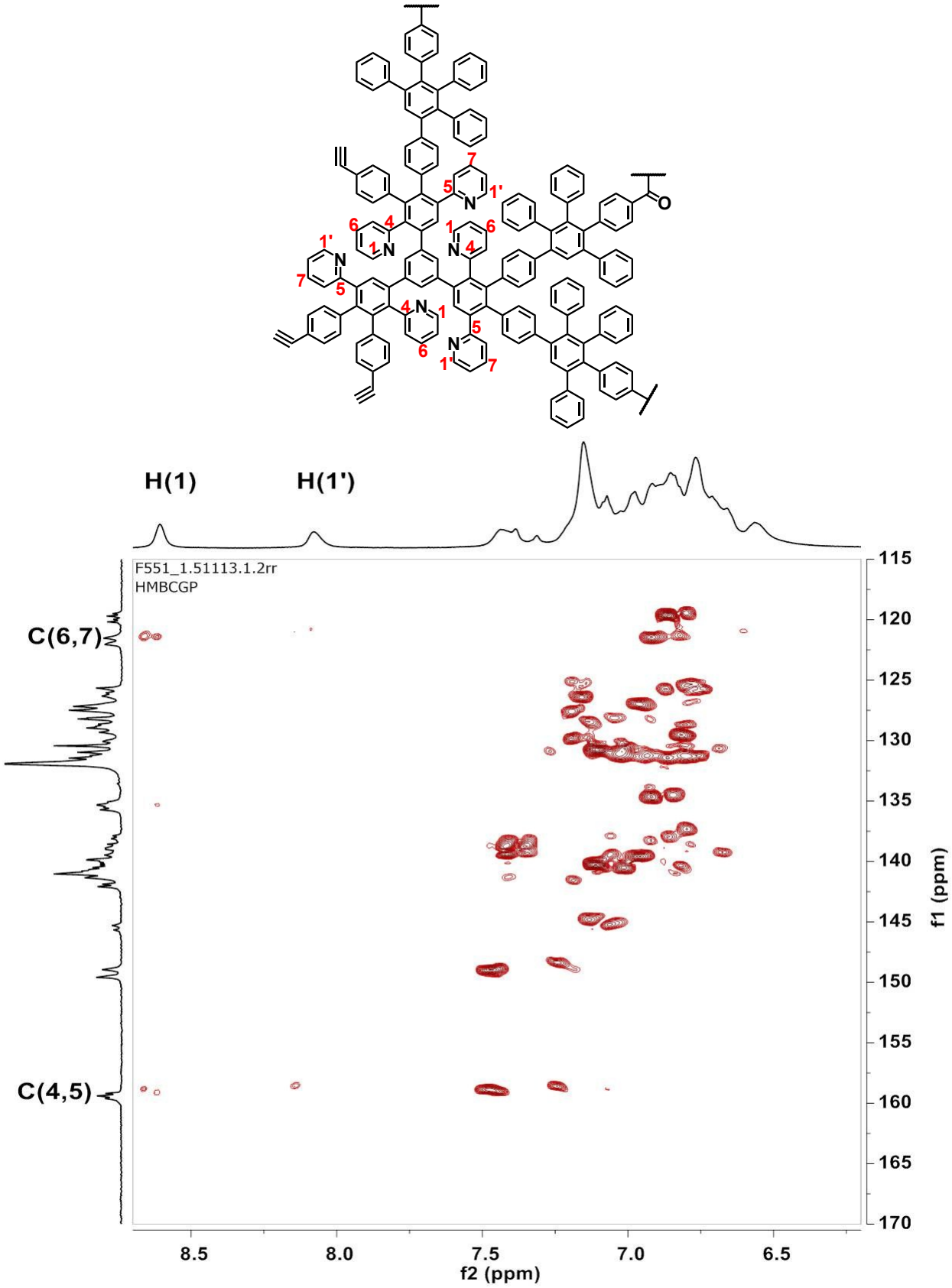


Figure S9.2D HMBC spectrum (aromatic area) and the proposed fragment of polymer 25 corresponding to the spectrum

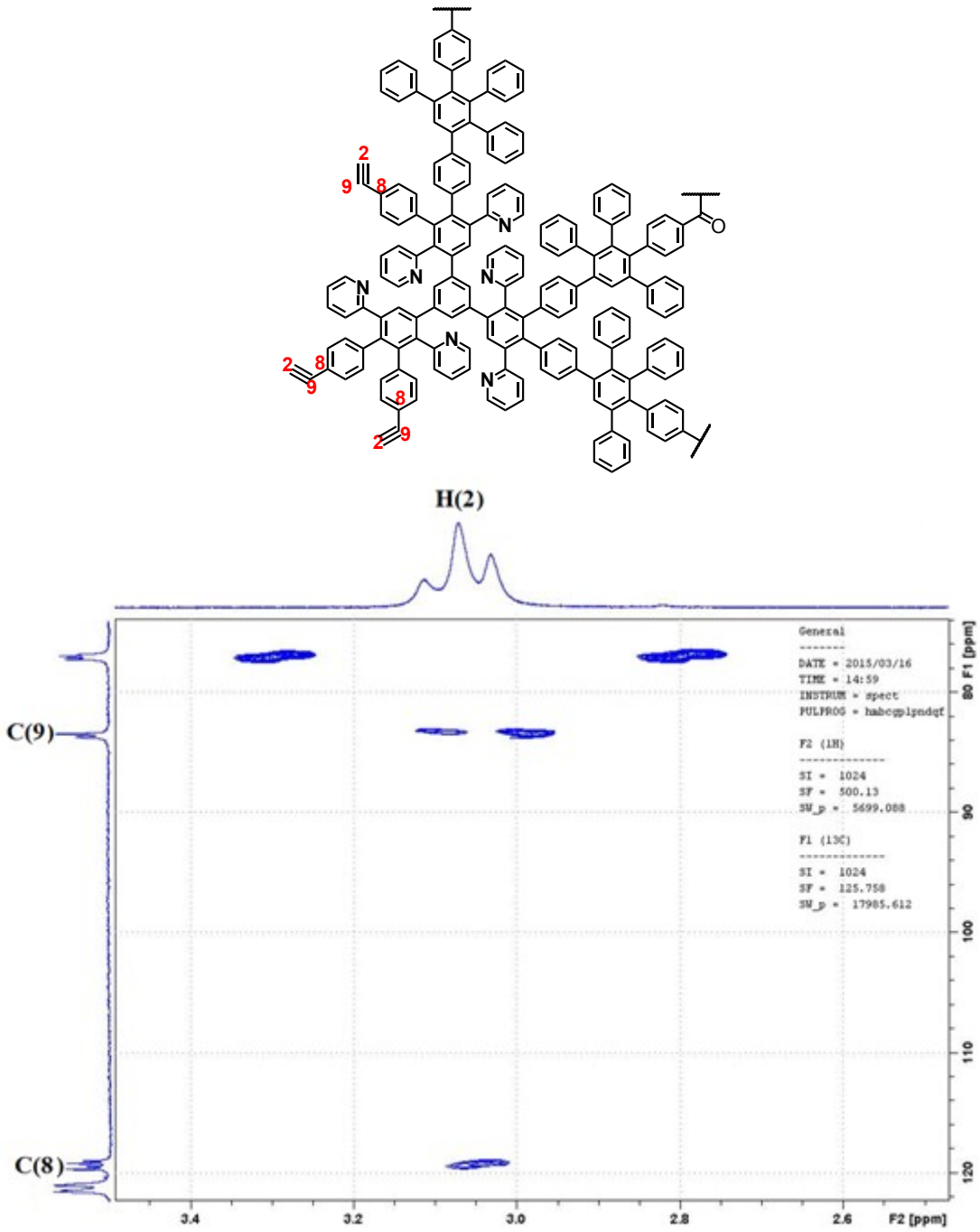


Figure S10. 2D HMBC spectrum (acetylene area) and the proposed fragment of polymer 25 corresponding to the spectrum

The HMBC experiment gives correlations between carbons and protons that are separated by two or three bonds.The H(1) and H(1') signals of α-protons of nonequivalent pyridine moieties of the polymer at 8.61 and 8.08 ppm correspond to the correlation signals at 159.4 ppmfor C(4) and C(5)and at 122.1 and 121.5 ppm for C(6) and C(7) in the 2D HMBC spectraof the polymer(Figure S9). The H(2)signals of the acetylene protons of the polymer at 3.08, 3.04, and 3.00 ppm correspond to the correlation signals at 83.9, 120.2, and 119.7 ppm, respectively, in the 2D HMBC spectra (Figure S10), indicating a quaternary carbon atom C(9) of the terminal acetylene groups of the polymer and the carbon atom C(8) in the aromatic moiety boundto the acetylene group of the polymer, respectively.

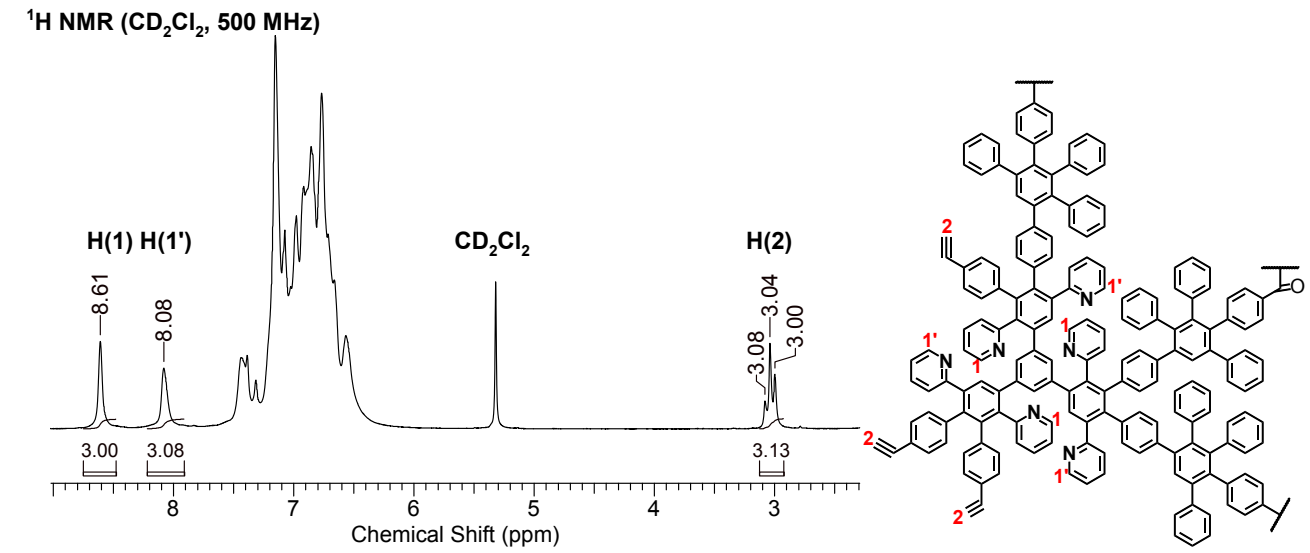


Figure S11.[1]H NMR spectrum and the corresponding fragment of polymer 25.

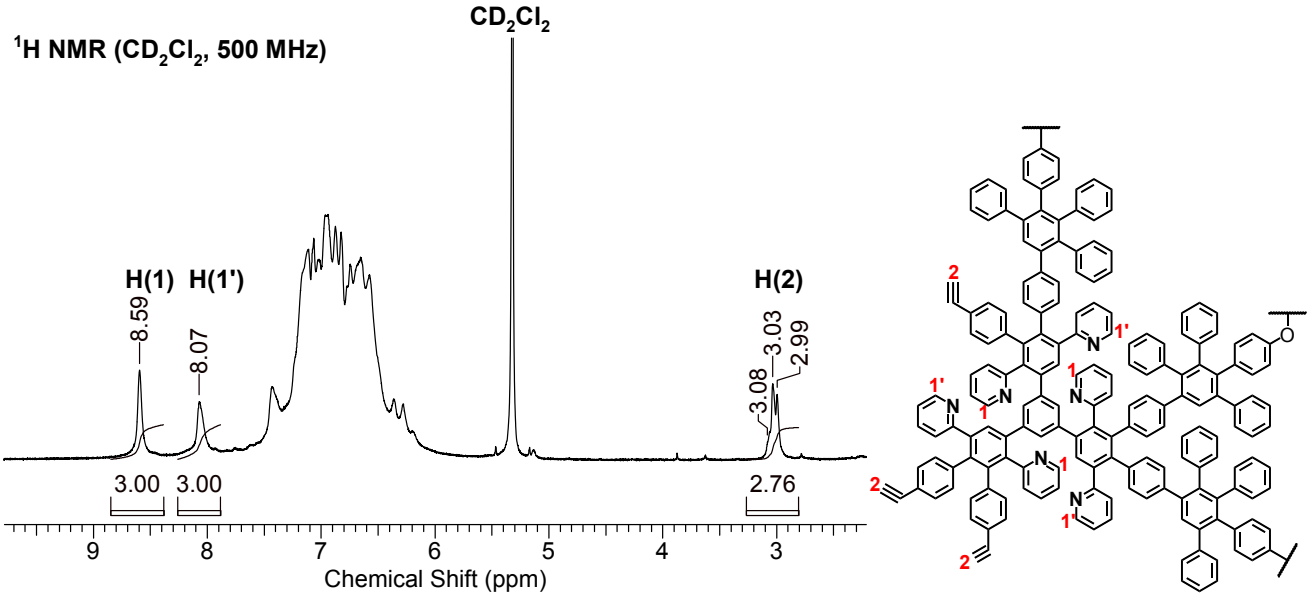


Figure S12.[1]H NMR spectrum and the corresponding fragment of polymer 20