Supporting Information

Synthesis and Properties of Polymers Containing 2*H*-benzimidazol-2-one Moieties: Polymerization via N-C Coupling Reactions

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Characterization (MALDI-TOF mass and ^{1}H NMR spectra) of poly(benzimidazolone sulfone) 10 (m=1). Matrix assisted laser desorption ionization time-of-flight (MALDI-TOF) mass spectrum was recorded on a BRUKER Autoflex III Smartbeam MALDI-TOF mass spectrometer with the instrument set in positive reflection mode to get higher resolution. ^{1}H NMR (400 MHz) spectrum, reported in ppm, was recorded on a Varian Mercury 400 spectrometer using $CDCl_3$ as the solvent with tetramethylsilane as the internal standard.

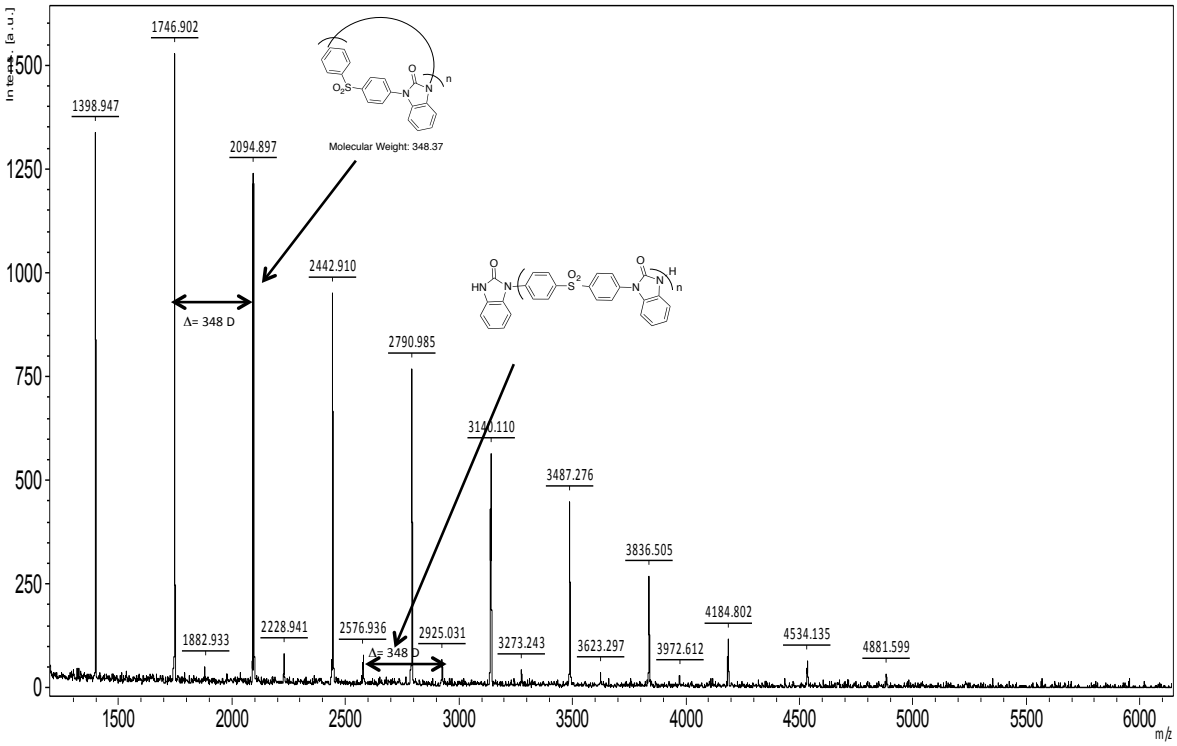

Figure S1. MALDI-TOF mass spectrum of low molecular weight part extracted with acetone from **10** (m=1).

The MALDI-TOF mass spectrum of the homopolymer, poly(benzimidazolone sulfone) **10** (m=1), shows only the cyclic oligomers accompanied by a very small amount of the linear structures containing two benzimidazolone end groups. This is very similar to the MALDI-TOF mass spectrum of the poly(aryl sulfone) from bisphenol A and bis(4-chloropheny)sulfone where the cyclic oligomers constitute the large majority of the low molecular weight species formed.[1] This conclusively demonstrates that the N-C coupling polymerization reaction proceeds in an essentially quantitative yield as depicted. The ^{1}H NMR spectrum further confirms the structure of **10** (m=1).

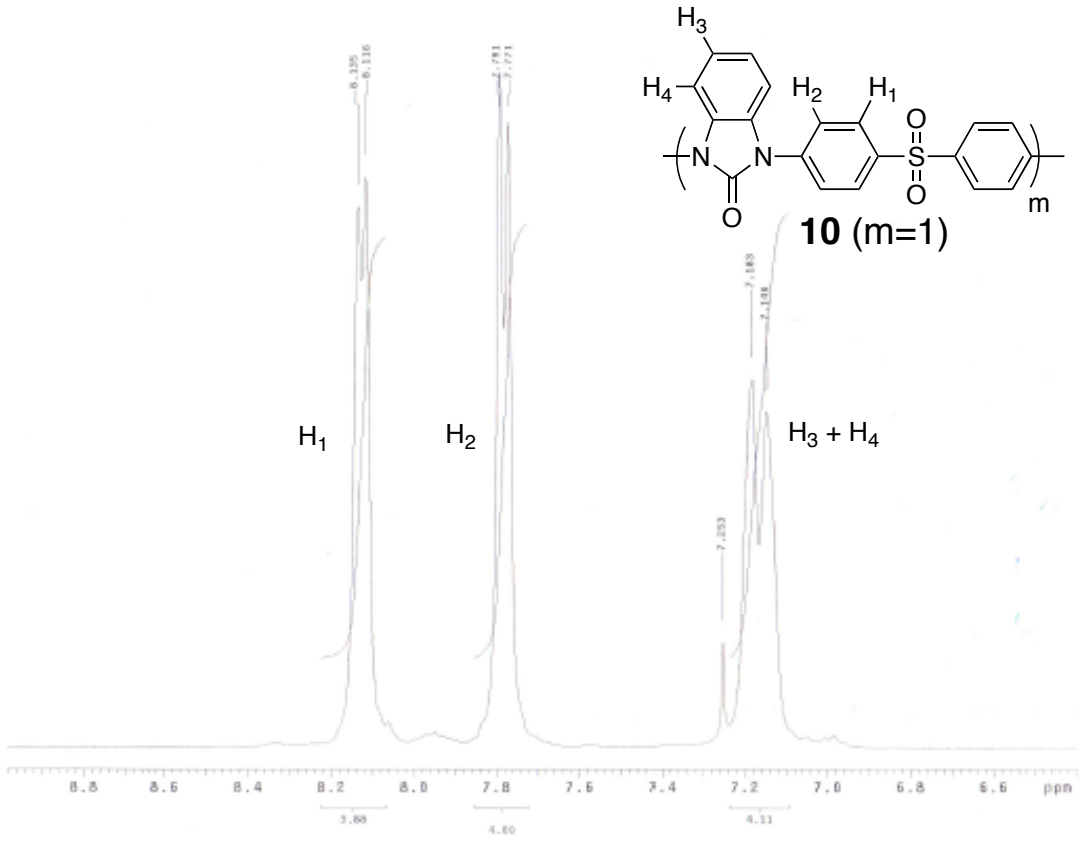

Figure S2. ^{1}H NMR spectrum of **10** (m=1) ($CHCl_3$-soluble part).

10 (m=1): ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.13 (d, 4H, *J* = 7.6 Hz), 7.78 (d, 4H, *J* = 8.0 Hz), 7.18-7.15 (m, 4H).

References

(1)Savariar, S.; Underwood, G. S.; Dickinson, E. M.; Schielke, P. J.; Hay, A. S. *Desalination* **2002,** *144*, 15-20.