SUPPORTING INFORMATION

Synthesis and Characterization of a Novel Vinyl-2, 2’-bipyridine Monomer and its Homopolymeric/Copolymeric Metal Complexes

Elefterios K. Pefkianakis, Nikolaos P. Tzanetos and Joannis K. Kallitsis*

Department of Chemistry, University of Patras, 26500, Patras, Greece

E-mail: J.Kallitsis@chemistry.upatras.gr
Figure S1: example of kinetic study of the ATR polymerization

$^1$H-NMR spectrum of a sample withdrawn from the polymerization reaction and more specifically after 2 hours. The spectrum is obtained in DMSO-$d_6$ at 313$^0$K. This way, the complexes’ peaks are better shown and the peaks of DMSO are shifted to the right, revealing the protons of the initiator used. Moreover the region of the aromatic protons includes the aromatic protons of the initiator (b, c, e, f), but due to the limited amount of the initiator in the polymers’ chain and the low conversion at that time, they are not evident as separate peaks. On the contrary the methylene protons of the initiator used (a, 6H) are obvious at $\approx$3.9ppm.

The vinyl monomer complex d consists of 27 aromatic protons, as many as the incorporated monomer in the polymers’ chain. In addition as aforementioned, there are 7 aromatic protons of the initiator, in the aromatic region of the spectrum.
Example of Mn calculation:

*integrations*

3 vinyl protons of monomer \(d\) (9, 10, 11): \(2.843/3\)H = 0.947 \(\Rightarrow\) 1H=0.947

27 aromatic protons of monomer \(d\): \(27 \times 0.947 = 25,587\)

6 methylene protons of initiator \(a\): \(0.267/6 = 0.044\) \(\Rightarrow\) 1H= 0.044

7 aromatic protons of initiator \(b, c, f, e\): \(7 \times 0.044 = 0.311\)

54 aromatic protons in total: 31,939 (integration from 7.4-8.9ppm)

27 aromatic protons of polymer = 31,939 - 25,587 = 6,372

Abstracting the initiators’ aromatic protons \(\Rightarrow\) 6,372 - 0.311 = 6,060

27 aromatic protons of the polymer = 6,060 \(\Rightarrow\) 1H= 0.224

Finding the analogy of the polymers’ protons to that of the initiators:

\(\Rightarrow\) 0.224/0.044 \(\approx\) 5.1

This means that 5 monomers are attached to the initiator at this time

\[\text{Mn} = (5.1 \times 962) + 313 \approx 5250\]
Figure S2: GPC trace of P3iii 95/5 using UV detection at \( \lambda = 254 \text{nm} \)

Figure S3: GPC trace of P4iii 95/5 using the R.I. indicator
Figure S4: PL spectra of copolymers P4 after excitation at 290nm, in DMF.