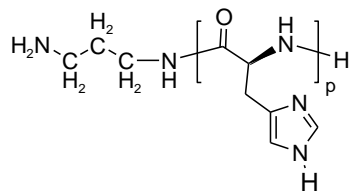


Sample Name: α,ω -Diamino terminated Poly L-Histidine

Sample#: P40866A-His2NH2

Structure:

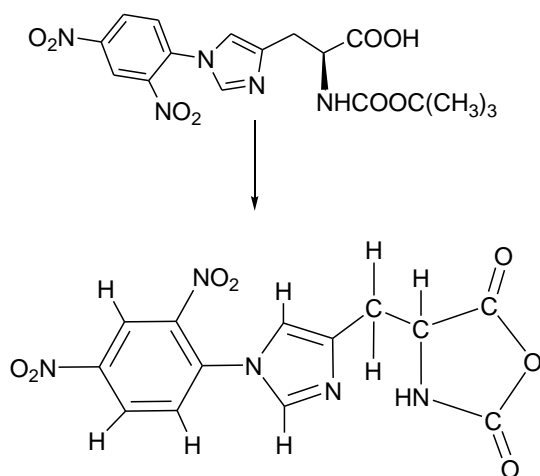


Composition:

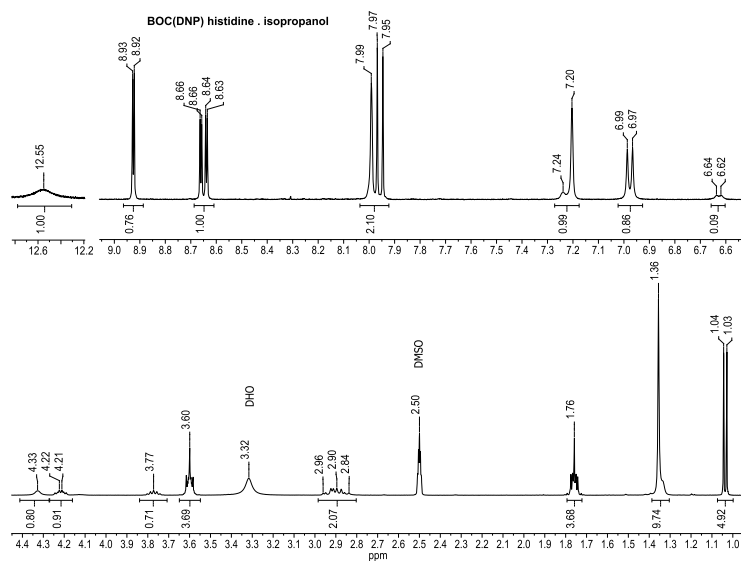
Mn x 10 ³	PDI
4.0(by HNMR)	< 1.3 By GPC

Synthesis:

Dinitro Phenyl histidine N-carboxy anhydride (NCA (DNP) Histidine) was prepared from BOC (DNP) Histidine isopropanol presented as below scheme:

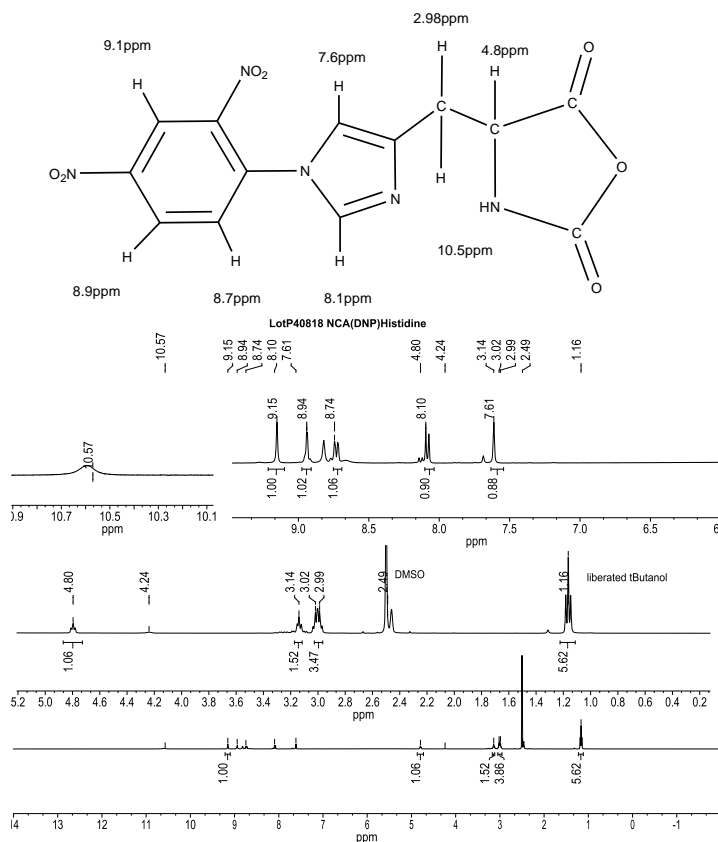


¹HNMR spectrum of BOC-(DNP) Histidine.
Isopropanol run in dMSO d6;



¹HNMR of NCA (DNP) Histidine run in dMSO d6;

Chemical Shifts in d6 dMSO



¹H NMR spectrum of P40866-BOC-[DNP]Hisidine Dp: 22. The spectrum shows peaks in the aromatic region (6.5-9.5 ppm) and aliphatic region (1.0-4.5 ppm). Integration values are provided below the peaks.

Chemical Shift (ppm)	Integration
9.08	23.49
8.78	29.44
8.63	36.01
8.09	22.77
7.95	21.49
7.54	
4.67	
4.25	
3.23	
2.89	
2.73	
2.53	
1.38	
1.20	
1.09	

1H NMR spectrum of P40866A-Histidine 2NH2. The x-axis represents chemical shift in ppm, ranging from 0.0 to 11.0. The spectrum shows several peaks: a broad peak at ~9.0 ppm, a multiplet between 7.0-8.0 ppm, a sharp peak at ~5.6 ppm, a broad peak at ~4.0 ppm, a multiplet between 3.0-4.0 ppm, and a very large, sharp peak at ~2.4 ppm. Integration values are provided above the peaks: 8.96, 7.25, 4.27, 3.96, 3.07, and 2.49.

Chemical shifts in DMF

The chemical structure of poly(N-vinylcarbazole) is shown with the following chemical shifts in DMF indicated by arrows:

- 1.2 ppm: Methyl protons of the tert-butyl group.
- 1.4 ppm: Methylene protons adjacent to the amide group.
- 3.0 ppm: Methylene protons adjacent to the amide group.
- 3.75 ppm: Methylene protons of the vinylcarbazole unit.
- 5.1 ppm: Protons of the vinylcarbazole unit.
- 2.8 ppm: Protons of the vinylcarbazole unit.