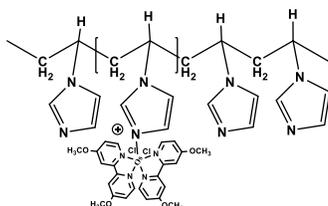


Sample Name: Poly (N-vinyl imidazole-partially quaternized with bis (2,2-bipyridine-4,4-dimethoxy N,N') complex of Osmium (II) Cis(bis(2,2-bipyridine4,4-dimethoxy–N,N-) dichloroosmium (II) salt

Sample #: P44435-VIMDZQ-Osmium

Structure:



Composition:

Mn x 10 ³ of VIMDZ	PDI
8.3	1.5
(Degree of quaternization is ca. 25%)	

Synthesis Procedure:

Poly (N-vinyl imidazole) is synthesized by free-radical polymerization in toluene using AIBN as the initiator. The partial quaternization was performed in DMF with osmium salt.

Characterization:

The molecular weight and polydispersity index (PDI) of Poly (N-vinyl imidazole) are obtained by size exclusion chromatography using water with 0.1% TFA and 0.2M NaCl as eluent. The degree of quaternization is calculated based on the results of element analysis. NMR spectrum was recorded on Varian 500 in deuterated DMF.

Solubility:

Polymer is soluble in methanol, ethanol, DMF.

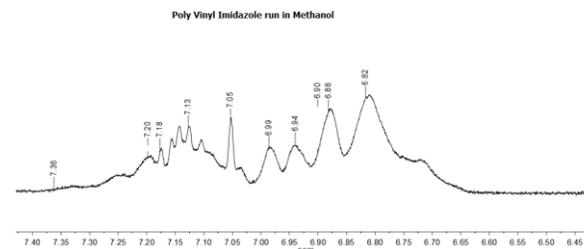
Purification:

Purification of the polymer after quaternization with bis (2,2-bipyridine-4,4-dimethoxy N,N') Osmium dichloride complex (Osmium (II)): Polymer recovers from ethanol and dried and soxhlet for 3 days with Benzene. The traces amount of unreacted Osmium 2, 2 bipyridine dichloride separated out from the polymer. Salt being soluble in benzene while the complex polymer is insoluble in benzene.

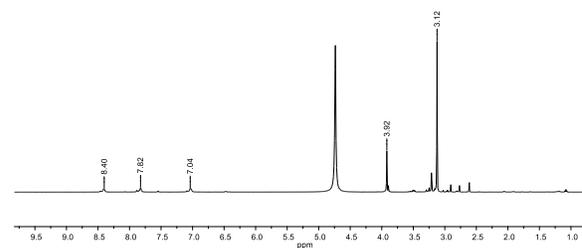
Degree of quaternization: From the yield of the polymer after reaction with osmium salt was calculated and found the % of quaternization was 25%.

HNMR of the polymer after quaternization also illustrate about 25% degree of quaternization with osmium salt. FTIR also illustrates absorbance due to Osmium salt at 1256 and 1116cm⁻¹.

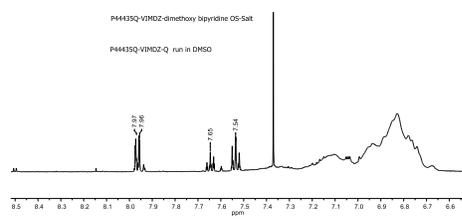
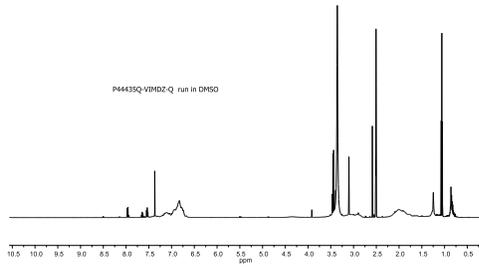
H NMR of poly Vinyl Imidazole in methanol



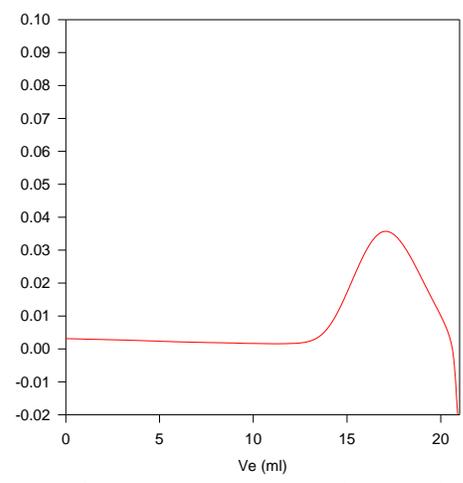
Cis(bis(2,2-bipyridine-4,4 dimethoxy –N,N-) dichloroosmium (II) salt
Sample: OS-Dimethoxy Bipyridine



**PolyVIMDZ quaternized with Osmium salt:
Run in DMSO**



SEC of Homopolymer (before quaternization):



Size exclusion chromatography of poly(vinylimidazole) with respect to quaternized poly(2-vinylpyridine) standards:
Eluent: Water with 0.1% trifluoroacetic acid and 0.2M NaCl
 $M_n=8300$ $M_w=12500$, $PI=1.50$

**PolyVIMDZ quaternized with Osmium salt:
Run in Methanol**

