Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Study of the Properties of Luminescent Poly[1-(2-propynyl)-3-methylimidazolium bromide] Oligomer Prepared Using $Mo(CO)_6$/ Phenol Catalyst

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Fig. S1. ^{1}H NMR spectrum of 1-(2-propynyl)-3-methylimidazolium bromide in $CDCl_3$ at RT.

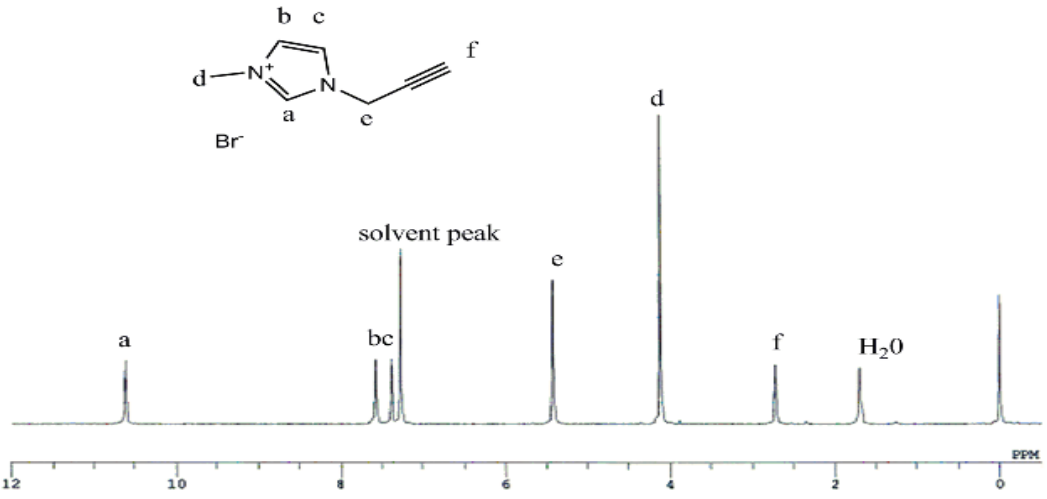
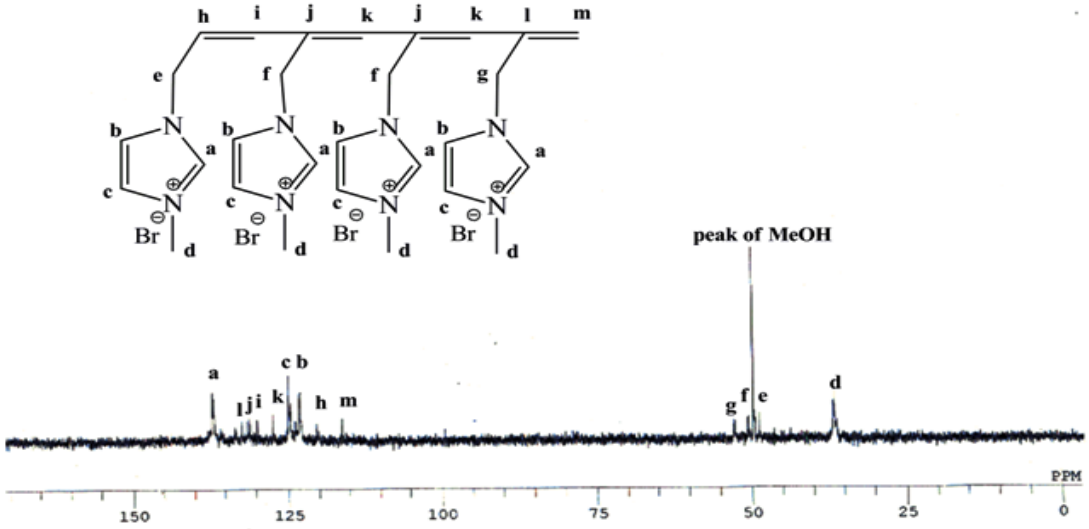


Fig. S2. ^{13}C NMR spectrum of oligomer in D_2O at RT



Alkene carbons (132.5, 131.26, 139, 127.58, 120.37, 116.2 ppm) along with other characteristic carbon peaks of pendant group (137.25, 124.95, 123.88, 52.83, 50.69, 48.89 ppm

Fig. S3. Mass spectrum of oligomer

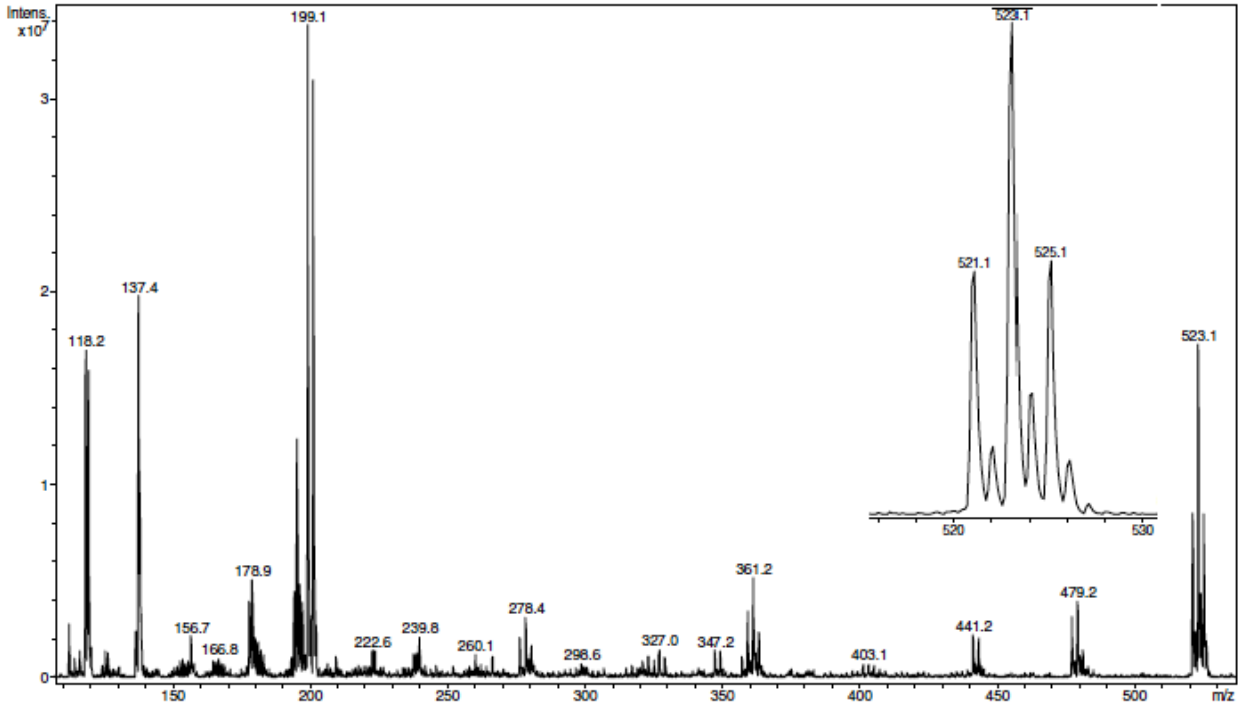


Figure S4. UV-Visible absorption spectra of 0.125 mg/mL oligomer solution in deionized water mixed with sodium acetate (1:0.0; 1:0.1; 1:0.2; 1:1.0 weight ratios).

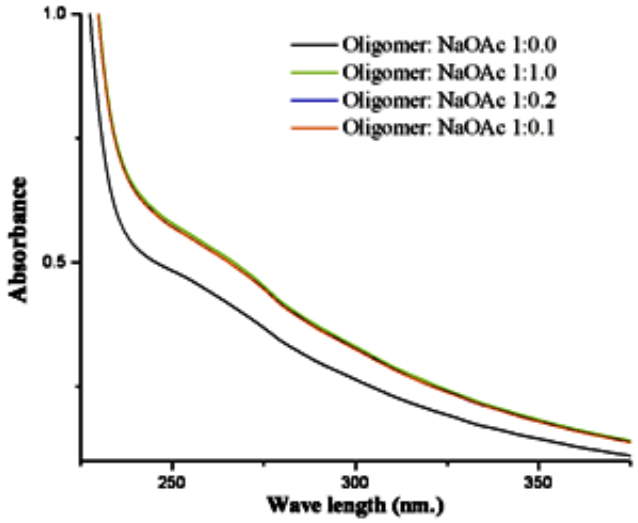


Figure S5. Fluorescence spectra of 0.125 mg/mL oligomer solution in deionized water mixed (1:1weight ratio) with sodium salt of formate, propionate, oxalate, malonate, fluoride, chloride, bromide, carbonate, sulphate and phoshphate (A), thiosulfacte and thiocynate (B).

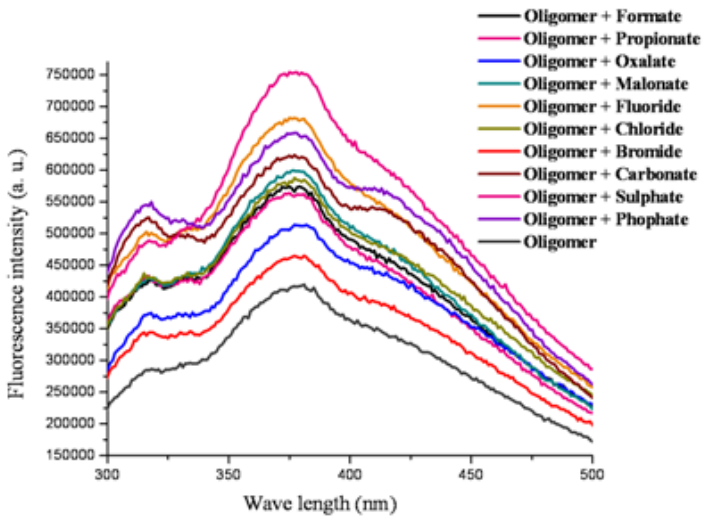


Fig. S6. DTA of oligomer and IL (Heating rate 10°C/min; N_2 atmosphere)

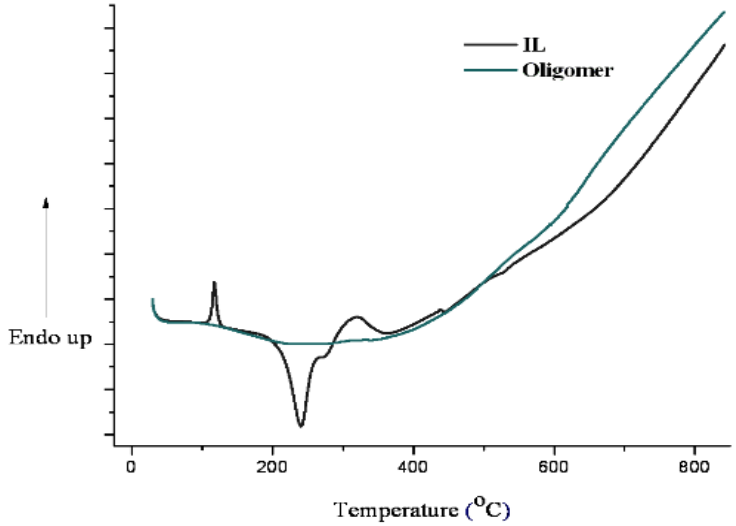
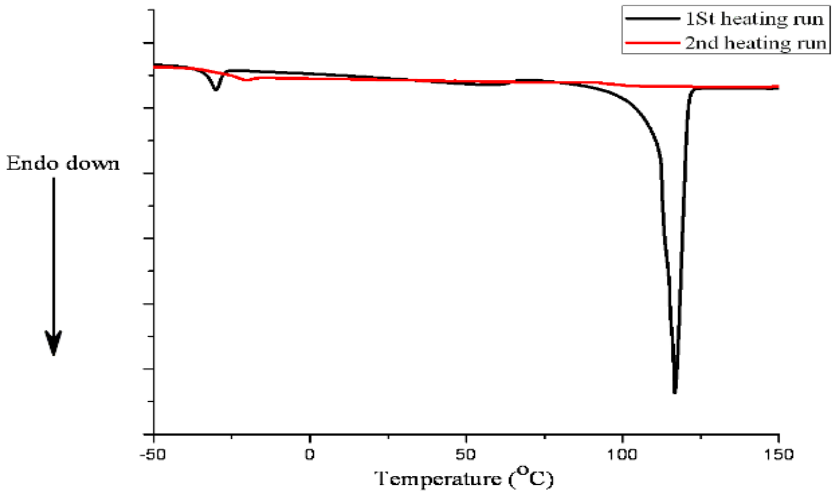


Fig. S7. DSC of IL monomer (Heating rate 10°C/min; N_2 atmosphere)



In second heating run, however, it did not shown the prior established melting point, but shown the T_g with a shift.[1,2] This is probably because the quenching to low temperature is too fast for proper crystallization and it remained in super cooled state.[2] The result is in good agreement with previous literature reports.[1,2]

Reference:

1. B. Ringstrand, S. Seifert and M. A. Firestone, *J. Polym. Sci. B: Polym. Physics*, 2013, **51**, 1215–2127.

2. S. Schneider, G. Drake, L. Hall, T. Hawkins, and M. Rosander, *Z. Anorg. Allg. Chem.*, 2007, **633**, 1701-1707.