

SYNTHESIS OF MACROMONOMERS VIA OXYANION-MEDIATED POLYMERISATION.

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Recently, Nagasaki *et al.*¹ reported that certain heteroatom methacrylate monomers such as 2-(diethylamino)ethyl methacrylate (DEAEMA) can be polymerised using oxyanionic initiators at room temperature (see Figure 1). Furthermore, vinyl functional initiators lead to macromonomers. We have utilised this technique to synthesise of water-soluble macromonomers such as poly(2-dimethylamino)ethyl methacrylate (DMAEMA) and poly(*N*-morpholino)ethyl methacrylate with various reactive end-groups. These macromonomers can possess styrene-, allyl-, and vinyl ether-end-groups. We have used gel permeation chromatography studies with UV and RI detectors in tandem to confirm the presence of functional groups on each polymer chain. Polydispersities are relatively narrow ($M_w/M_n \approx 1.2 - 1.3$). NMR studies have also confirmed the presence of the functional end-groups. These macromonomers have been subsequently used as stabilisers in the synthesis of polystyrene latexes *via* both aqueous emulsion and non-aqueous dispersion polymerisation techniques. We have also demonstrated that the tertiary amine groups present in each DMAEMA monomer residue can be reacted quantitatively with 1,3-propanesultone to give the first examples of betaine macromonomers. We believe that these are the first examples of polybetaine macromonomers.

¹ Y. Nagasaki, Y. Sato and M. Kato, *Makromol. Rapid Commun.*, **18**, 827 (1997)