10.1071/ CH06317_ AC

Accessory Publication: Aust. J. Chem., 2006, 59(10), 763–771.

Synthesis of Carboxylic Acid and Ester Mid-Functionalised Polymers *via* RAFT Polymerisation and ATRP

Nino Malic[A] *and Richard A. Evans*[A,B,C]

[A] CSIRO Molecular & Health Technologies, Bag 10, Clayton VIC 3169 Australia and The Cooperative Research Centre for Polymers, 8 Redwood Drive, Notting Hill, VIC 3168, Australia.

[B] Centre for Advanced Macromolecular Design (CAMD), School of Chemical Engineering and Industrial Chemistry, The University of New South Wales, Sydney, NSW, 2052, Australia.

[C] Corresponding author. Email: richard.evans@csiro.au

Supplementary Material

Below are the actual GPC traces (Figures 1-12) of the carboxylic acid mid-functionalised polystyrene polymers **5a** – **5f** and poly(butyl acrylate) polymers **6a** – **6f**. They show the development of a shoulder on the right hand side of the major elution peak as molecular weight (M_n) increases.

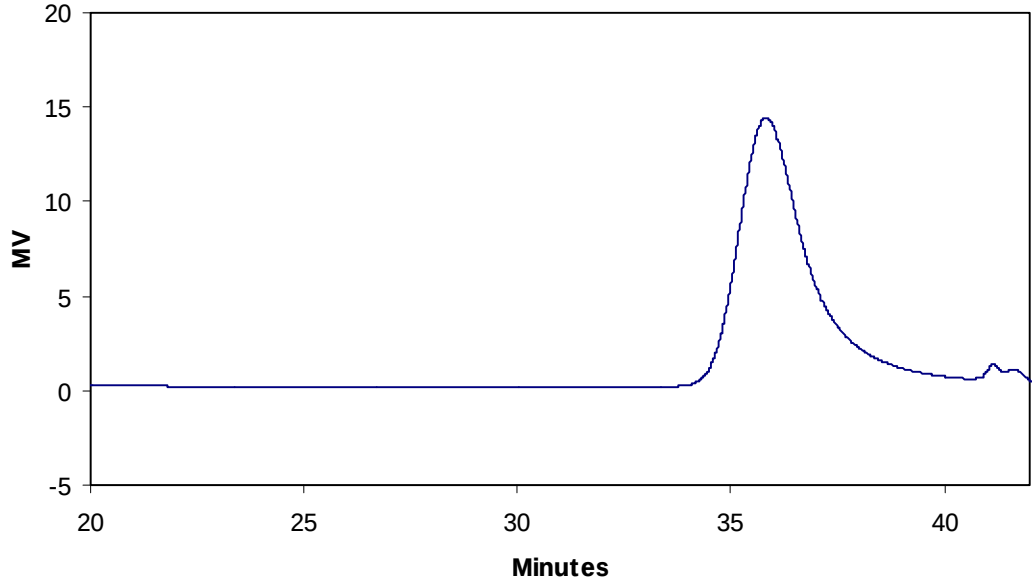

Figure 1. GPC trace of compound **5a** (M_n = 1,555 g mol^{-1})

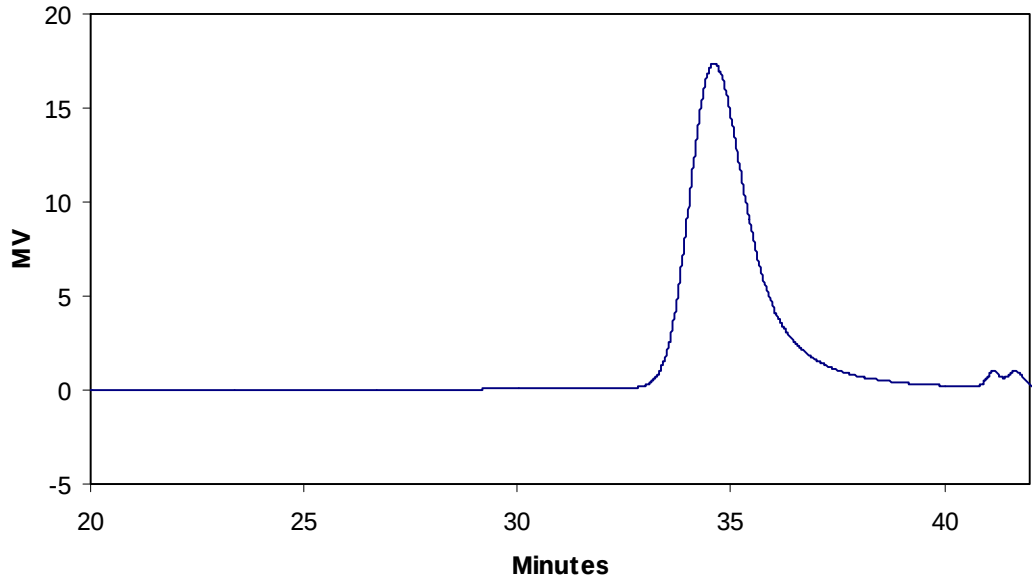

Figure 2. GPC trace of compound **5b** (M_n = 2,597 g mol^{-1})

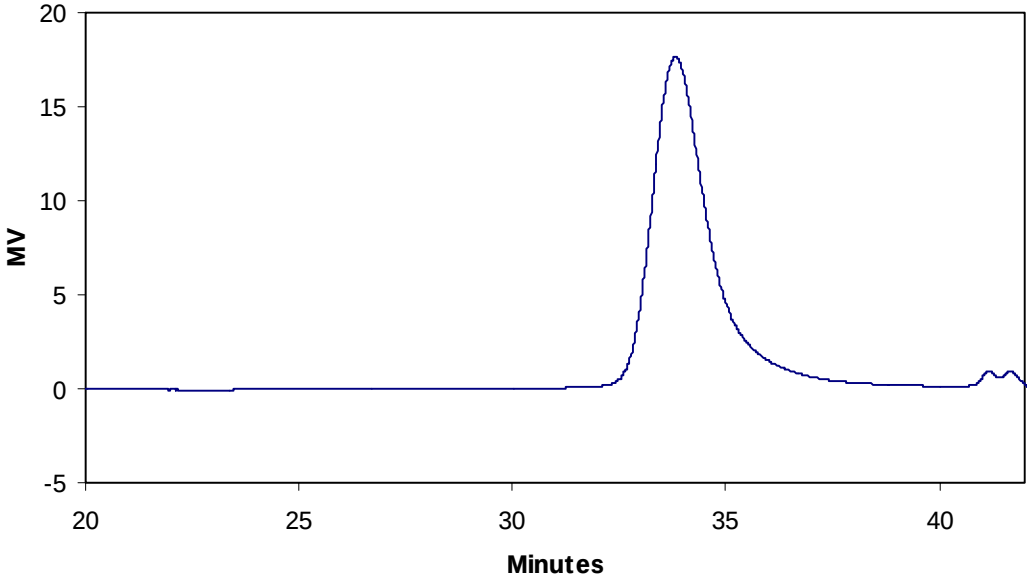

Figure 3. GPC trace of compound **5c** (M_n = 3,735 g mol^{-1})

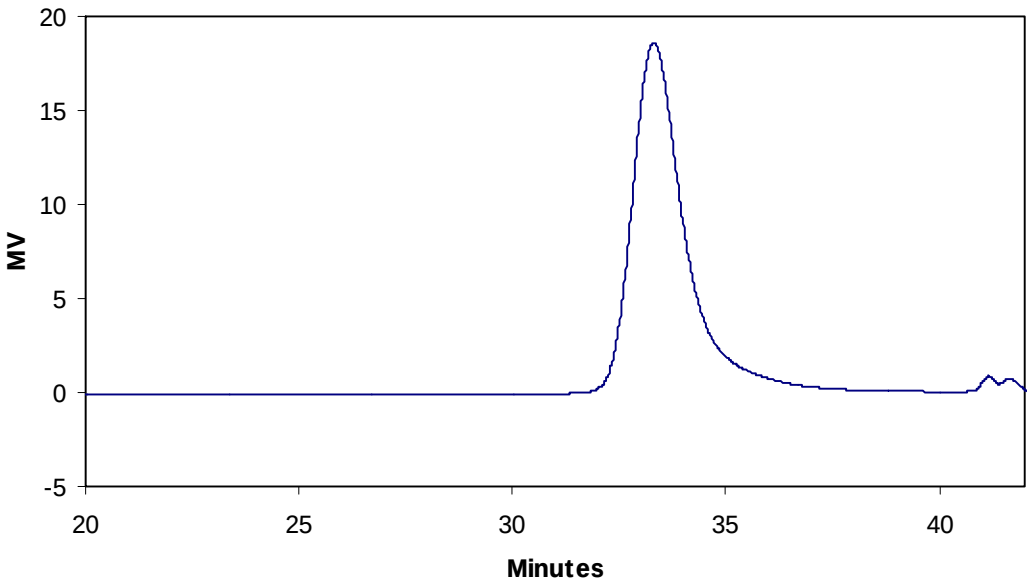

Figure 4. GPC trace of compound **5d** (M_n = 4,682 g mol^{-1})

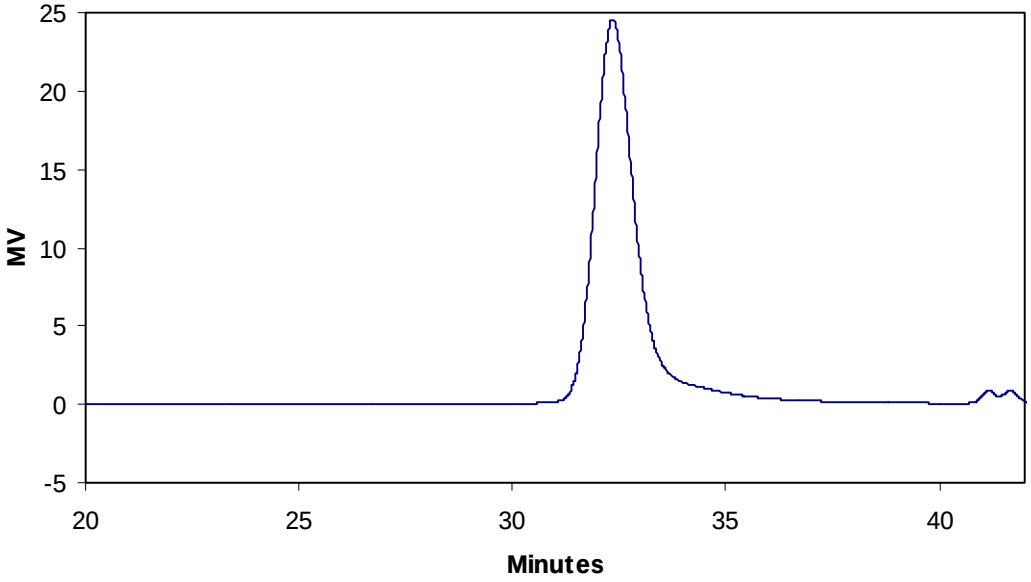

Figure 5. GPC trace of compound **5e** (M_n = 7,136 g mol^{-1})

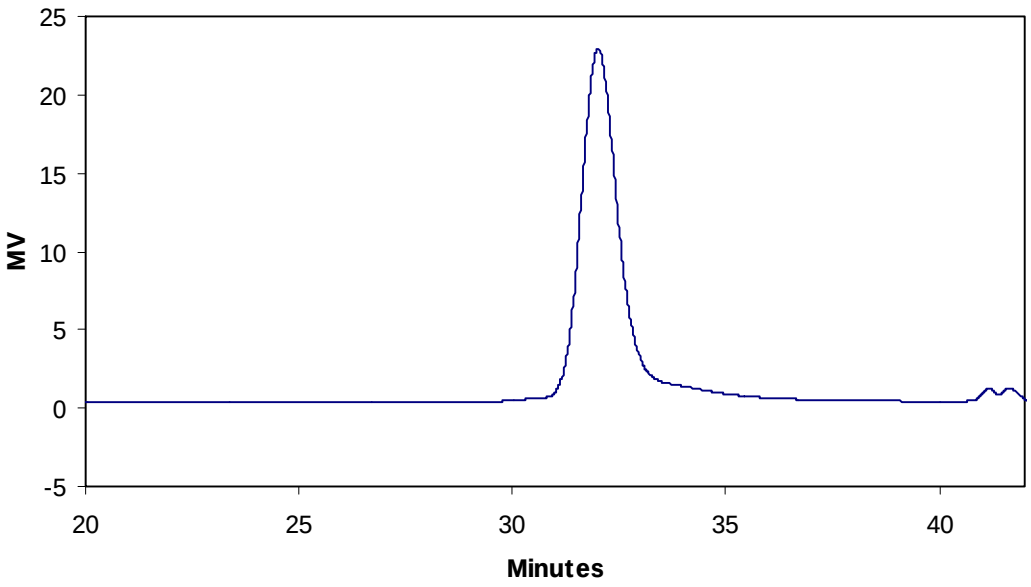

Figure 6. GPC trace of compound **5f** (M_n = 8,293 g mol^{-1})

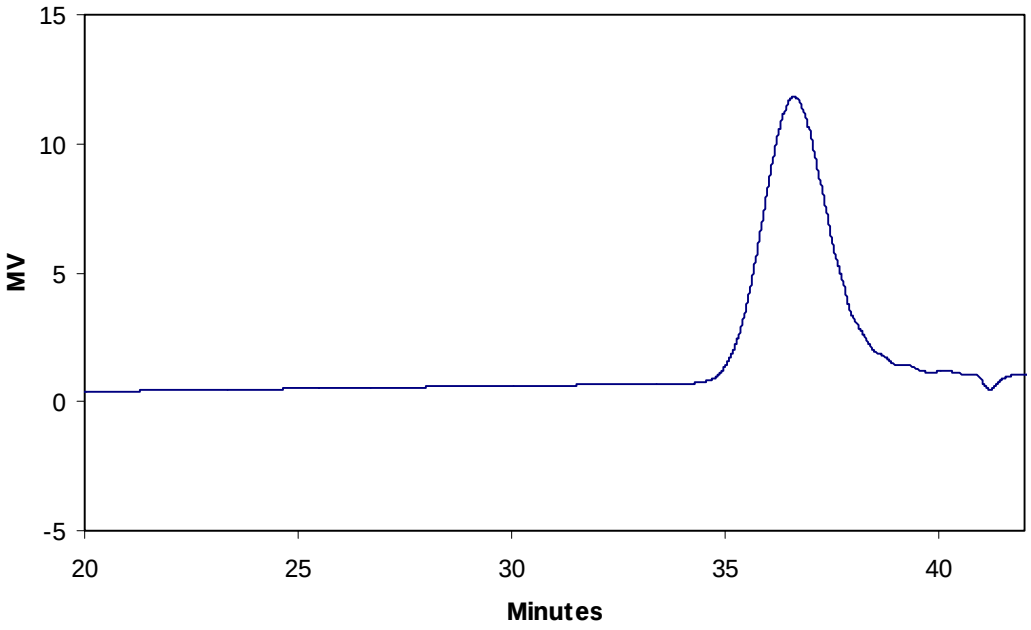

Figure 7. GPC trace of compound **6a** (M_n = 1,290 g mol^{-1}).

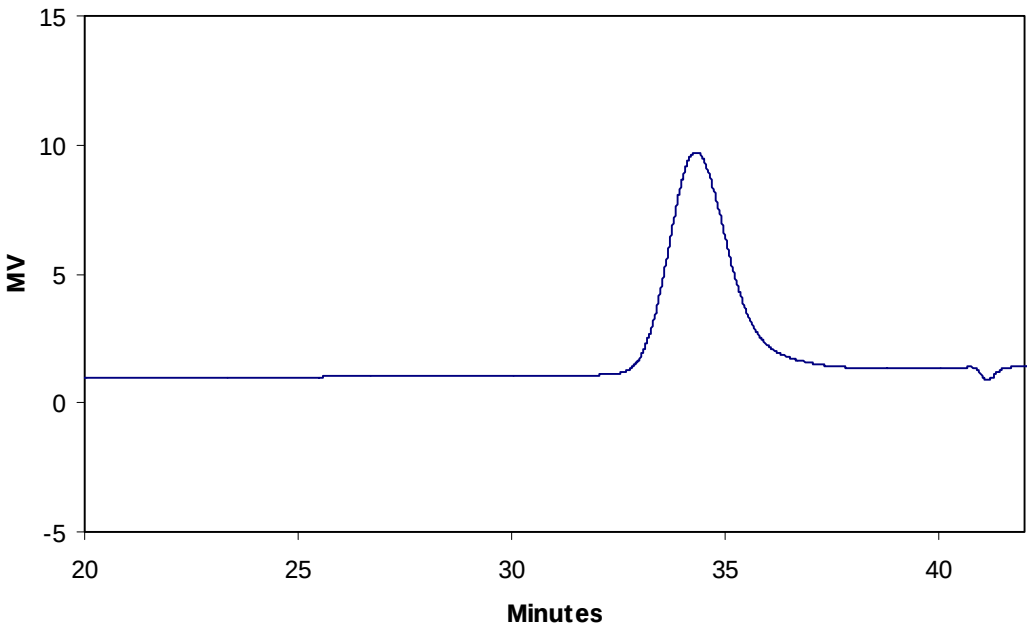

Figure 8. GPC trace of compound **6b** (M_n = 3,261 g mol^{-1}).

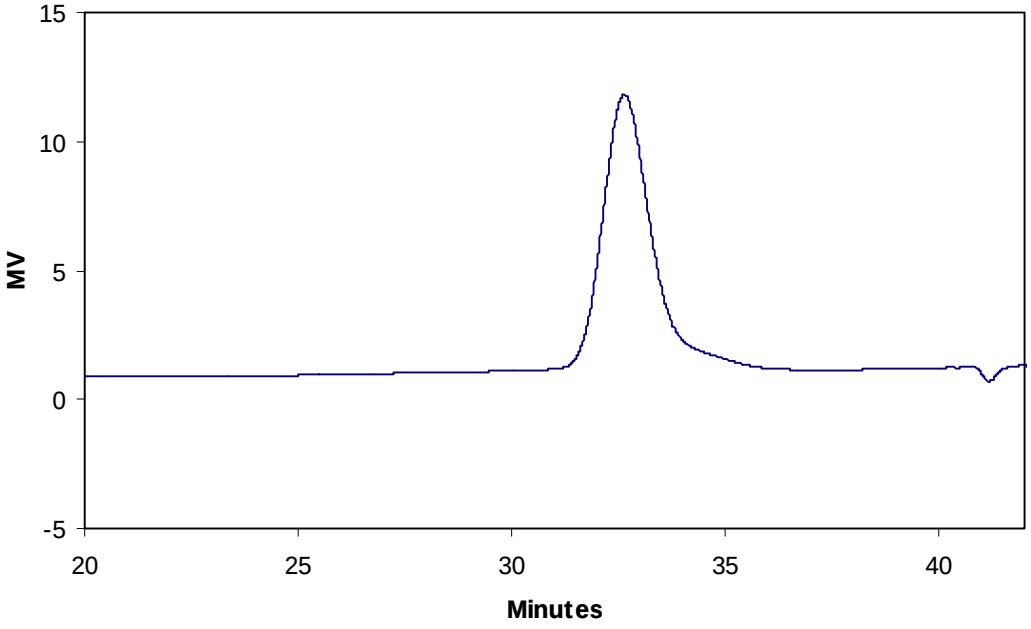

Figure 9. GPC trace of compound **6c** (M_n = 6,541 g mol^{-1}).

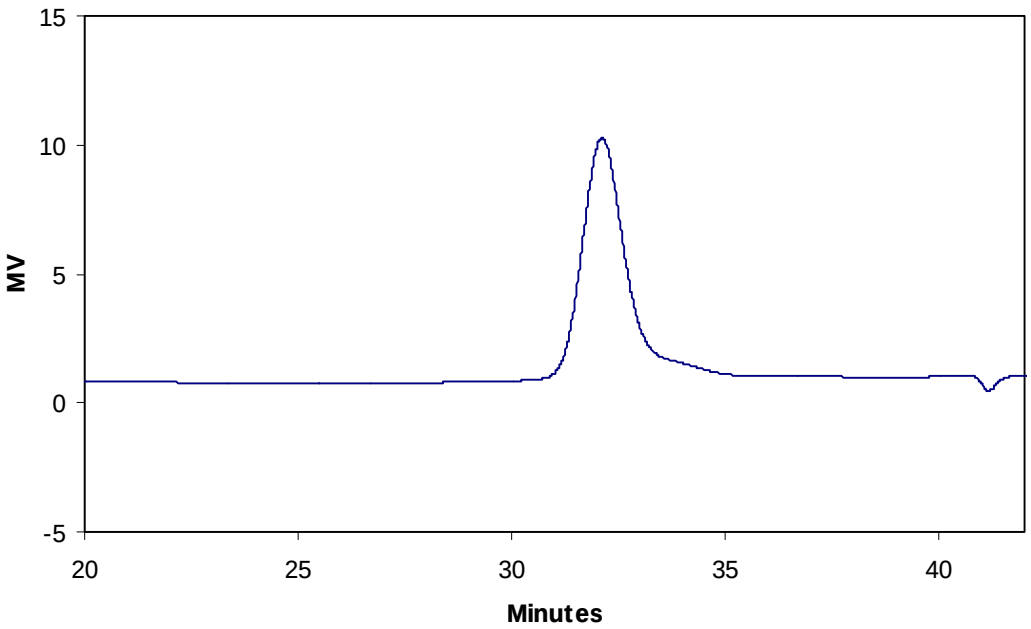

Figure 10. GPC trace of compound **6d** (M_n = 8,161 g mol^{-1}).

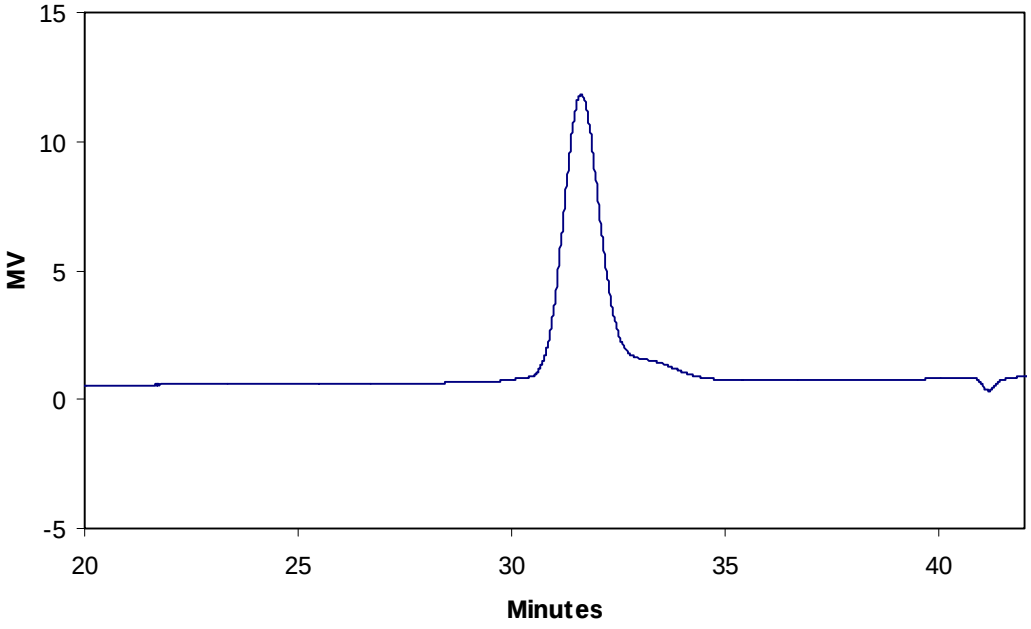

Figure 11. GPC trace of compound **6e** (M_n = 10,037 g mol^{-1}).

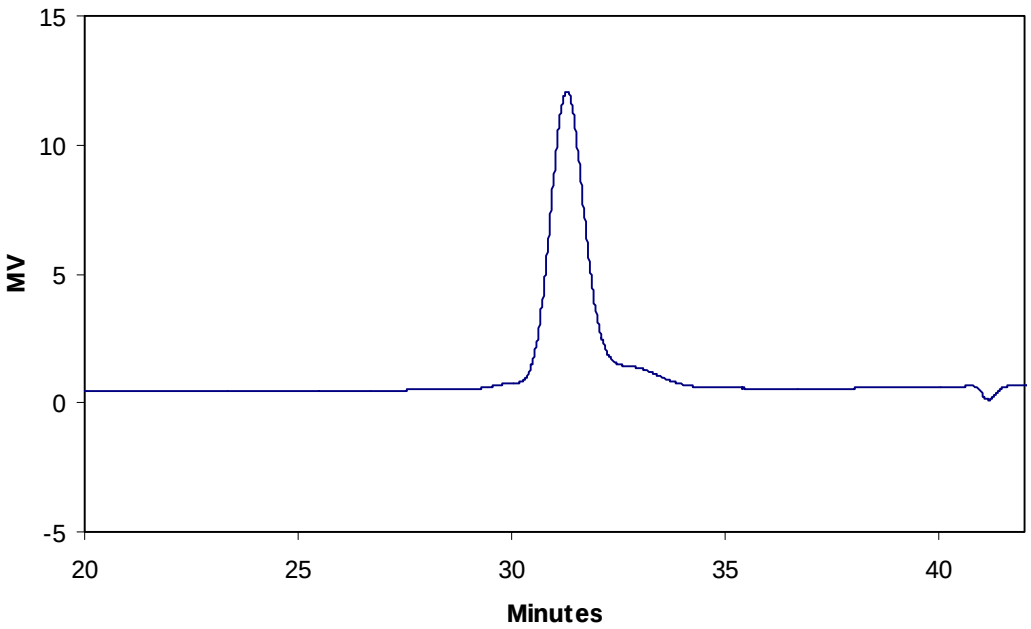

Figure 12. GPC trace of compound **6f** (M_n = 11,572 g mol^{-1}).

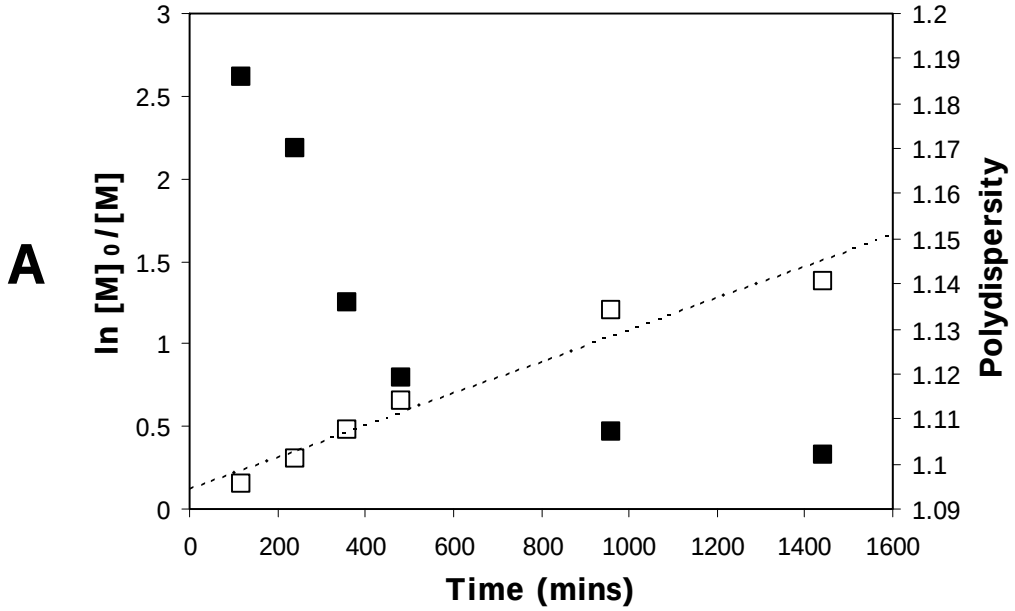

Figure 13. First-order kinetic plot and polydispersity *vs.* time for the RAFT mediated polymerisations of styrene, (ln $[M]_0/[M]$ □, PD ■), giving polystyrene products **5a-5f**.

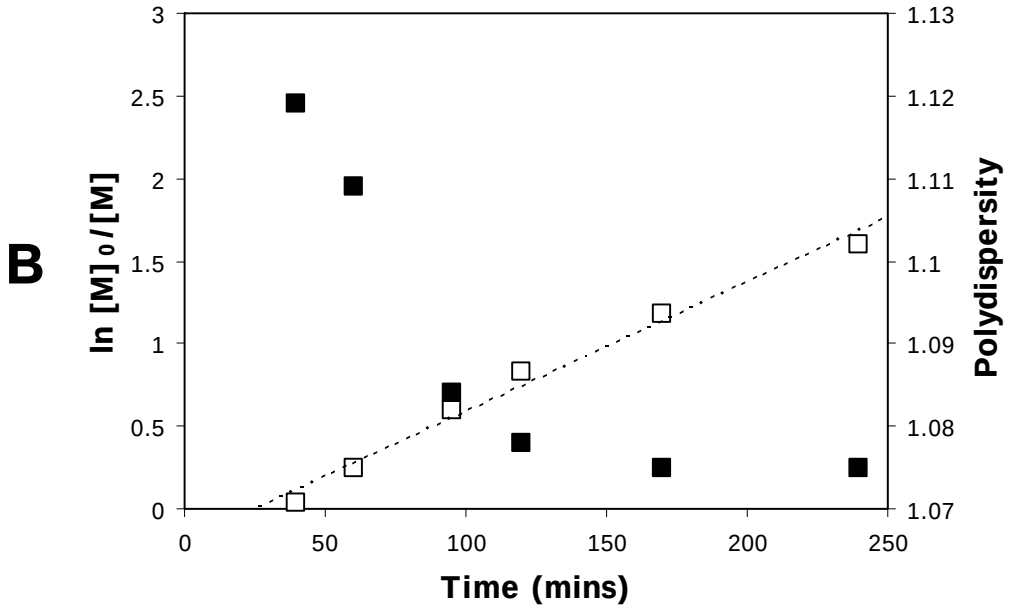

Figure 14. First-order kinetic plot and polydispersity *vs.* time for the RAFT mediated polymerisations of *n*-butyl acrylate, (ln $[M]_0/[M]$ □, PD ■), giving poly(*n*-butyl acrylate) products **6a-6f**.

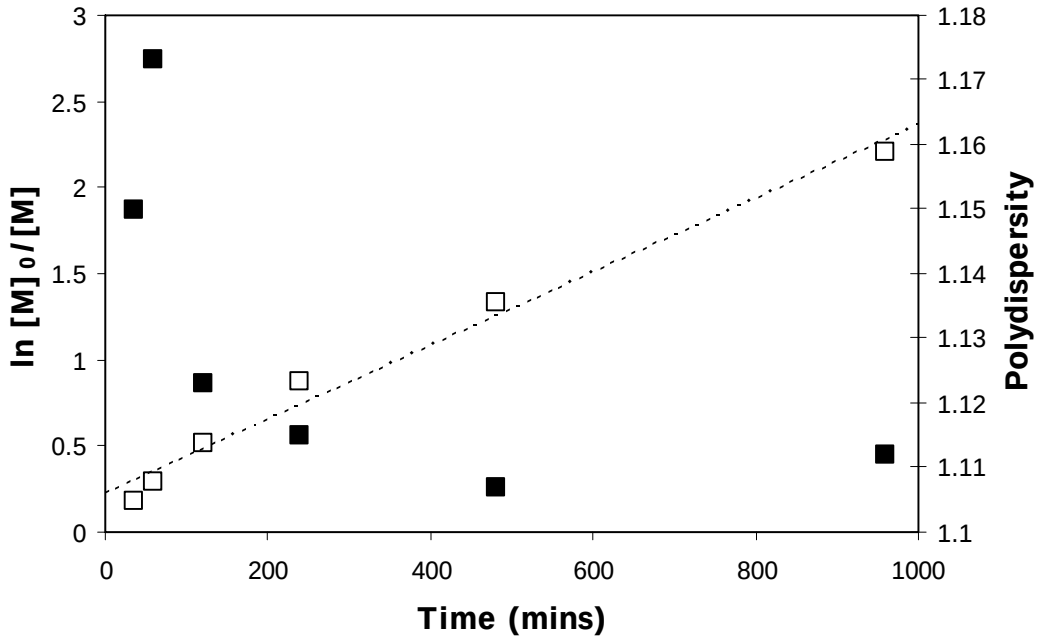

Figure 15. First-order kinetic plot and polydispersity *vs.* time for the ATRP of *n*-butyl acrylate using 9-fluorenylmethyl functionalised ATRP macroinitiator **8**, (ln $[M]_0/[M]$ □, PD ■), giving products **9a-9f**.