Electronic Supplementary Material (ESI) for Polymer Chemistry

Supporting Information

Amino Acid Vinyl Esters: A New Monomer Palette for Degradable Polycationic Materials

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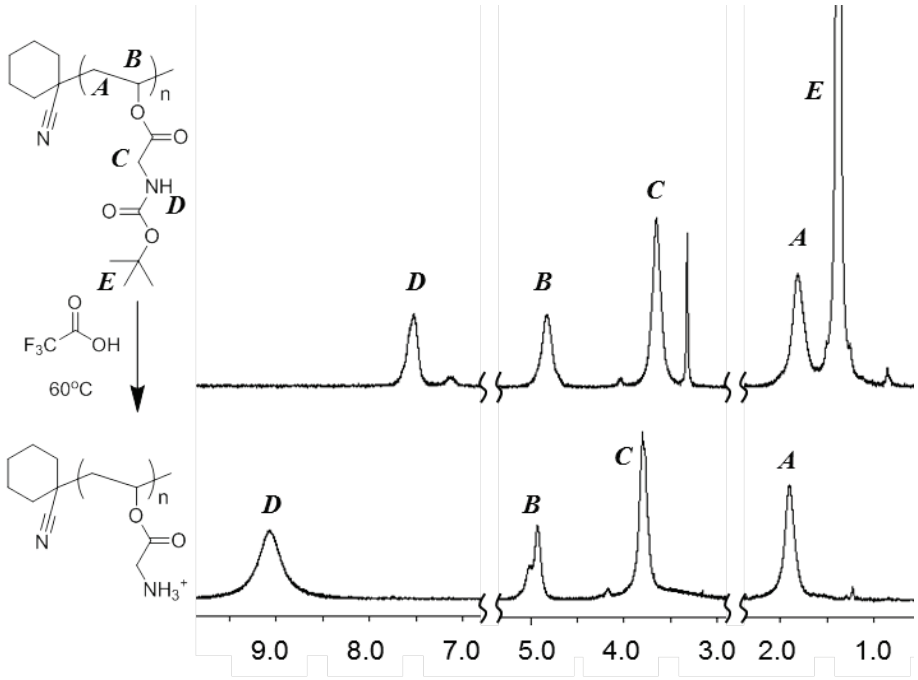

Figure S1. Boc-deprotection of (a) poly(*Boc*-glycine vinyl ester) (P(BGVE)-**1**; *top*) to the cationic (b) poly(vinyl ammonium glycinate trifluoroacetate) (P(VGly•CF_3COOH); *bottom*) using CF_3COOH at 60°C.

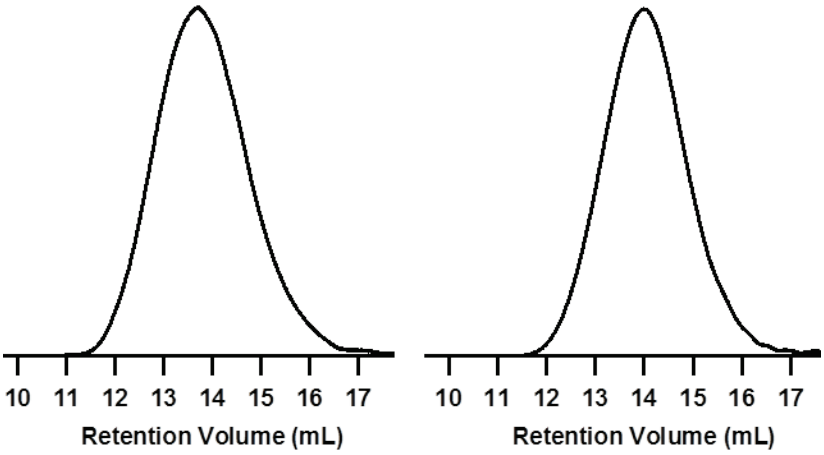

Figure S2. SEC traces of P(VAc-*co*-BVVE)-**3** (*left*) and P(VAc-*co*-BPVE)-**1** (*right*) using refractive index detection demonstrate unimodal molecular weight distributions of random copolymers.

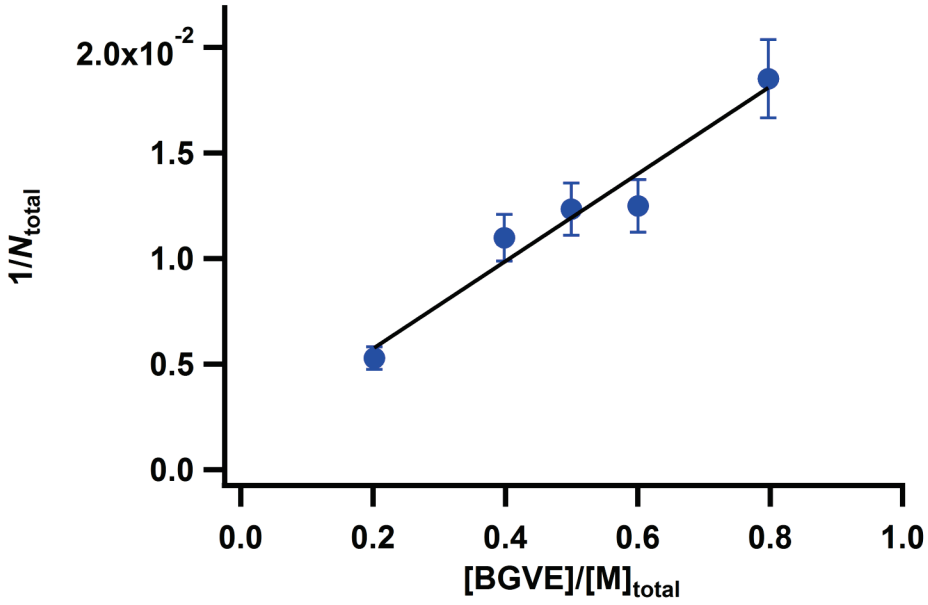

Figure S3. Mayo-Lewis plot of $1/N_{total}$ versus $[BGVE]/[M]_{total}$ based on P(VAc-*co*-BGVE) samples **1**-**5** (from Table 1) demonstrating a near linear relationship, suggestive of the fact that chain transfer to BGVE monomer contributes the observed trend of decreasing degree of polymerization (N_{total}) with increasing [BGVE] in the copolymerization feed. The error bars in this plot derived from the estimated 10 % error in the values of $1/N_{total}$ that were derived from absolute copolymer molecular weights determined by size exclusion chromatography with triple detection.

From the Mayo-Lewis equation and the plot shown in Figure S3, we find that:

$$\frac{1}{\nu_{tr}} = \frac{1}{\nu} + C_{BGVE}\frac{[BGVE]}{[M]_{total}} \qquad \text{(Equation S1)}$$

where ν_{tr} is the kinetic chain length when chain transfer is operative, ν is the kinetic chain length in the absence of any chain transfer events, $C_{BGVE} = 0.021$ is the chain transfer constant for BGVE, and $[M]_{total}$ is the total monomer concentration in the polymerization.

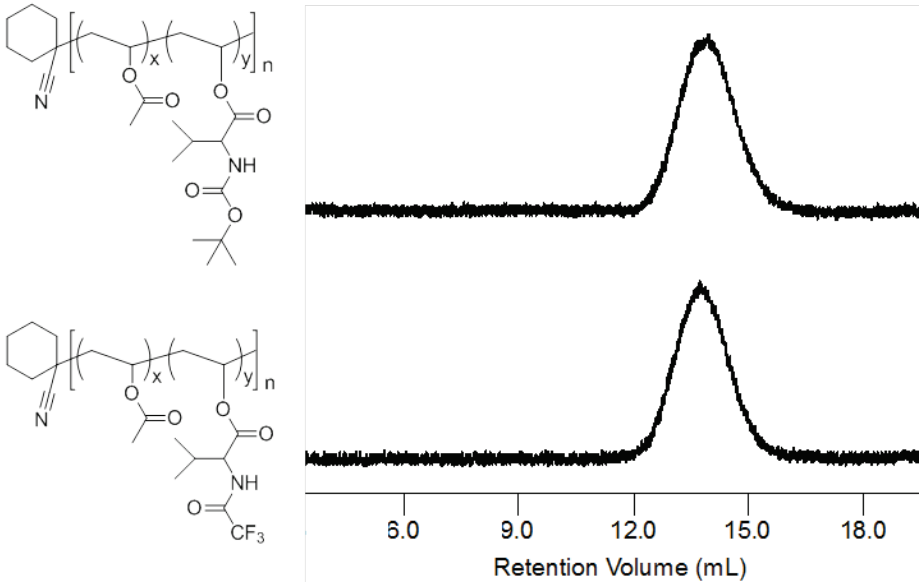

Figure S4. SEC traces of poly(vinyl acetate-*co*-*Boc* valine vinyl ester) (P(VAc-*co*-BVVE)-**2**) and poly(vinyl acetate-*co*-vinyl trifluoroacetamidovalinate) (P(VAc-*co*-VTFAcVal)-**2**) using viscometric detection demonstrate preservation of a unimodal molecular weight distribution after CF_3COOH *Boc*-deprotection and subsequent trifluoroacetylation.

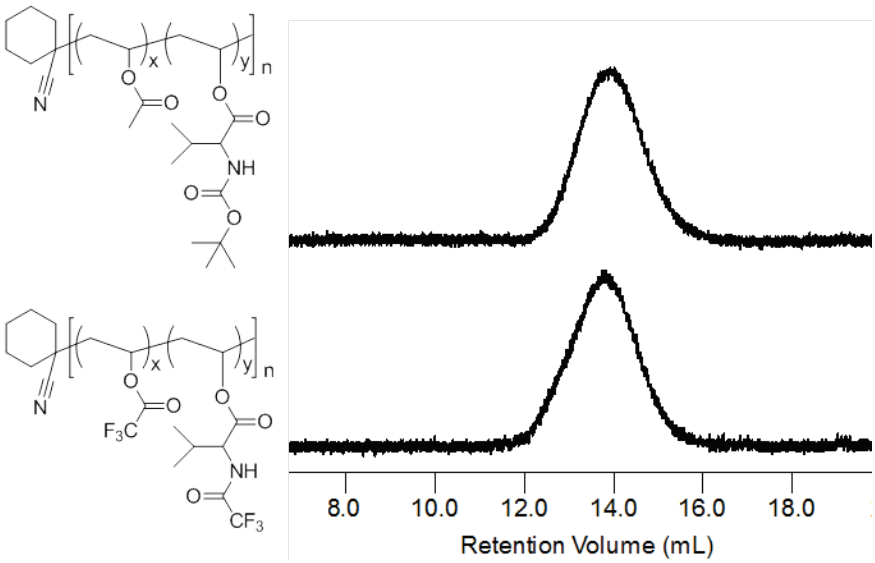

Figure S5. SEC traces of poly(vinyl acetate-*co*-*Boc* valine vinyl ester) (P(VAc-*co*-BVVE)-**2**) and poly(vinyl trifluoroacetate-*co*-vinyl trifluoroacetamidovalinate) (P(VTFAc-*co*-VTFAcVal)-**2**) using viscometric detection demonstrate preservation of a unimodal molecular weight distribution after HCl(aq) deprotection/hydrolysis and subsequent trifluoroacetylation.