Luminogenic Polyacetylenes and Conjugated Polyelectrolytes: Synthesis, Hybridization with Carbon Nanotubes, Aggregation-Induced Emission, Superamplification in Emission Quenching by Explosive, and Fluorescent Assay for Protein Quantitation

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Figure S1. $^1$H NMR spectra of (A) monomer 1 and (B) its polymer P1 (sample taken from Table 1, no. 5) in dichloromethane-$d_2$ at room temperature. The solvent and water peaks are marked with asterisks.

Figure S2. $^1$H NMR spectrum of P1 (from Table 1, no. 5) in dichloromethane-$d_2$ at room temperature.
Figure S3. $^1$H NMR spectrum of P1 (sample taken Table 1, no. 5) in the range of $\delta$ 5.0–8.0 in DMSO-$d_6$ at room temperature.

Figure S4. $^{13}$C NMR spectra of (A) monomer 1 and (B) its polymer P1 (sample taken from Table 1, no. 5) in chloroform-$d$ at room temperature. The solvent peaks are marked with asterisks.
**Figure S5.** IR spectra of (A) monomer 2 and (B) its polymer P2 (sample taken from Table 1, no. 12).

**Figure S6.** $^1$H NMR spectra of (A) monomer 2 and (B) its polymer P2 (sample taken from Table 1, no. 12) in chloroform-$d$ at room temperature. The solvent and water peaks are marked with asterisks.
Figure S7. $^{13}$C NMR spectra of (A) monomer 2 and (B) its polymer P2 (sample taken from Table 1, no. 12) in chloroform-$d$ at room temperature. The solvent peaks are marked with asterisks.

Figure S8. TGA thermograms of P1 and P2 measured under nitrogen at a scanning rate of 20 °C/min.
Figure S9. Emission spectra of P2 in different solvents; $c = 20 \, \mu\text{M}, \lambda_{\text{ex}} = 400 \, \text{nm}$.

Chart S1

Figure S10. (A) Emission spectra of $2^+$ in aqueous phosphate buffer (pH = 7.0) at different luminogen concentrations; $\lambda_{\text{ex}} = 400 \, \text{nm}$. (B) Effect of concentration of emission intensity at 559 nm.
Figure S11. Photographs of 2⁺ in aqueous phosphate (pH = 7.0) at different luminogen concentrations (μg/mL) taken under room lighting (upper panel) and 365 nm UV light illumination (lower panel).

Figure S12. Photographs of THF solutions of (A) 2 and (B) P2 at different luminogen concentrations (μg/mL) taken under room lighting (upper panel) and UV light illumination (lower panel).