Supporting Information

Zwitterionic Poly(vinylidene fluoride) Graft Copolymer with Unexpected Fluorescence Property

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Figure S1. APC traces in DMF of PVDM and PVDM-1 using PMMA standard, Flow rate: 0.5ml/min.



Figure S2. FT-IR spectra of PVDF, PVDM-1and PVDMS.



Figure S3. PL intensity versus wavelength plot of PVDMS (0.25% w/v, 2 mL solution) in aqueous solution with increasing amounts of (a) CTAB (as indicated) and (b) SDBS (as indicated) at excitation 390 nm.



Figure S4. PL intensity versus wavelength plot of PVDMS (0.25% w/v, 2 mL solution) in aqueous solution with increasing amounts of TRITON X-100 (as indicated) at excitation 390 nm.



Figure S5. Molecular orbitals (associated with the electronic transition in the absorption spectrum of polymer PVDM-1) in the optimized structure of its trimeric model (isolobal value=0.03).



Figure S6. Molecular orbitals (associated with the electronic transition in the absorption spectrum of polymer PVDMS) in the optimized structure of its trimeric model (isolobal value=0.03).



Figure S7. Energy diagrams of selected DFT calculated molecular orbitals for model PVDM-1 (red lines) and PVDMS (blue lines) both having three repeating units.

| Table S1. | Electronic | spectral | transitions | with | TD-DFT | (B3LYP/CPCM/H2O) | calculated |
|--------------|-------------|------------|-------------|-------------|----------|------------------|------------|
| values of tr | rimeric mod | lels of po | lymers PVI | DM-1 | and PVDI | MS. | |

| Polymer | $[\lambda_{obs}(\lambda_{calc})]nm$ | absorbance | Oscillator | Transition |
|---------|-------------------------------------|------------|--------------|-----------------------------|
| | | | strength (f) | |
| | | | (calc) | |
| PVDM-1 | 276(291) | 0.583 | 0.0208 | $HOMO \rightarrow LUMO+2$ |
| | | | | (92%) |
| | 430 (354) | 0.744 | 0.043 | $HOMO \rightarrow LUMO+1$ |
| | | | | (99%) |
| | 457 (468) | 0.829 | 0.0034 | HOMO-2 \rightarrow LUMO |
| | | | | (100%) |
| PVDMS | 297 (214) | 0.617 | 0.008 | $\text{HOMO-8} \rightarrow$ |
| | | | | LUMO+1 (56%) |