

SUPPORTING INFORMATION

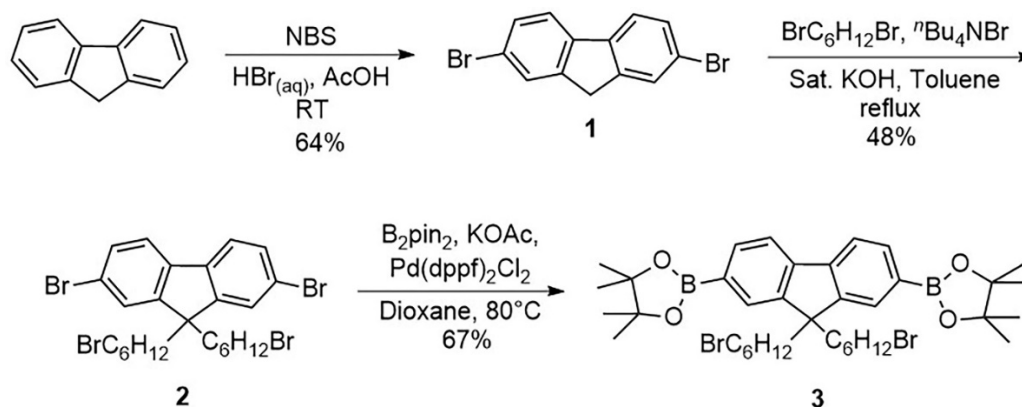
Decoration of polyfluorene-wrapped carbon nanotubes using photocleavable
cleavable side chains

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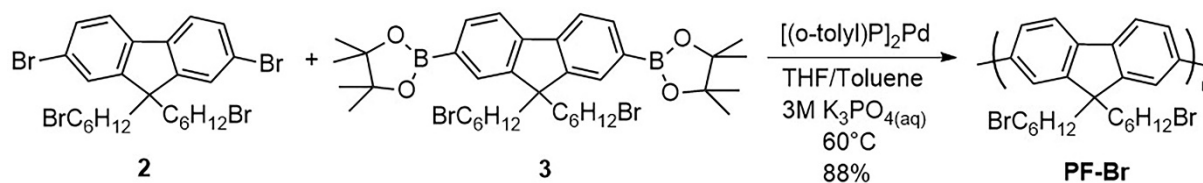
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Experimental

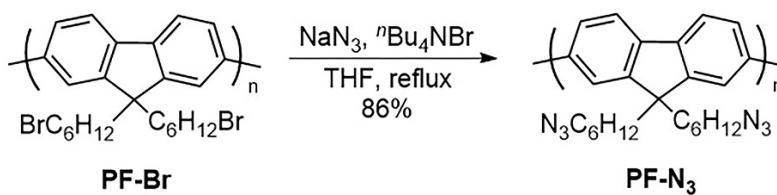
Synthetic procedures



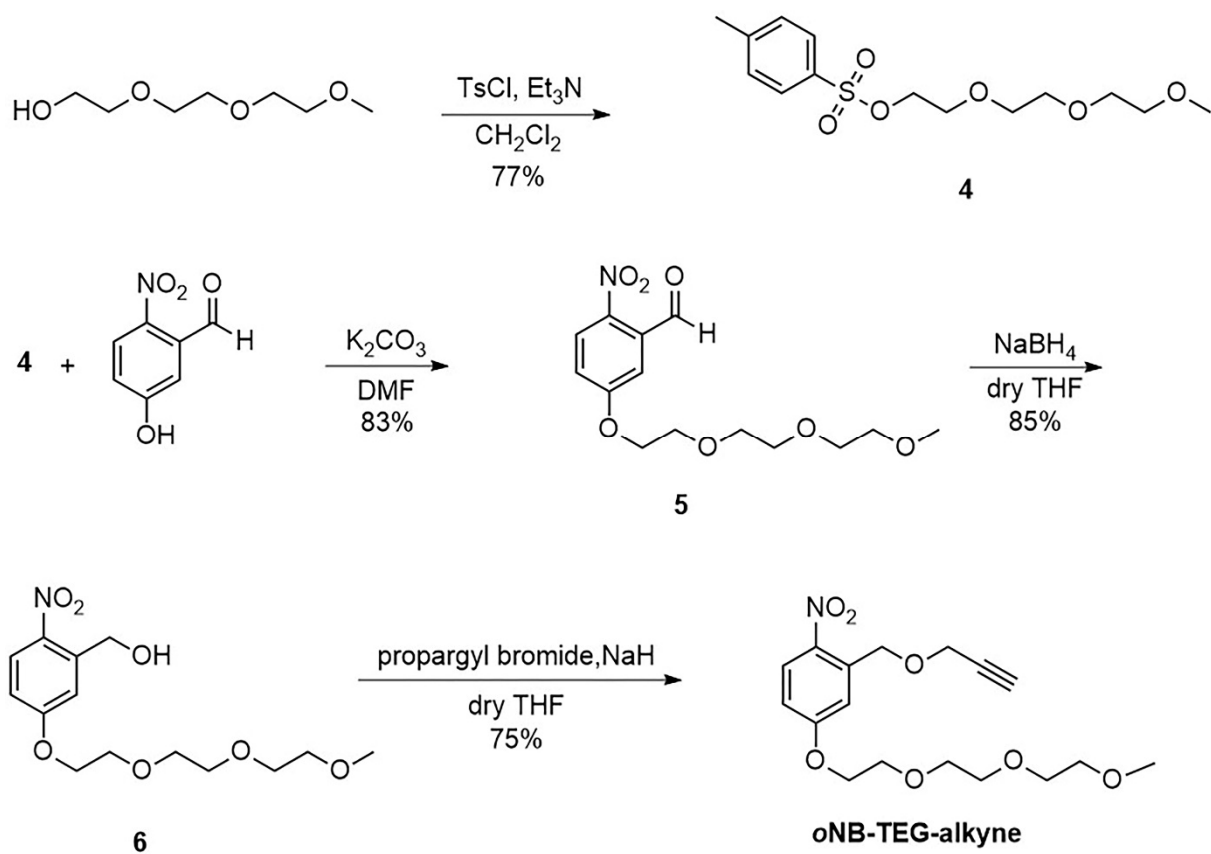
Scheme S1: Synthesis of monomers **2** and **3** [1].



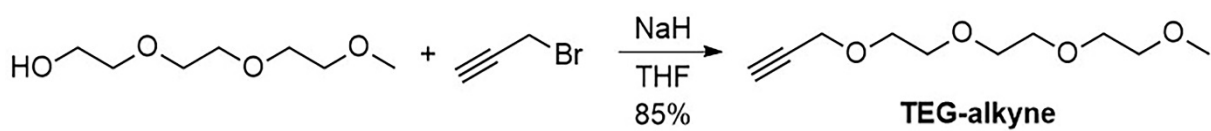
Scheme S2: Synthesis of **PF-Br** [1].



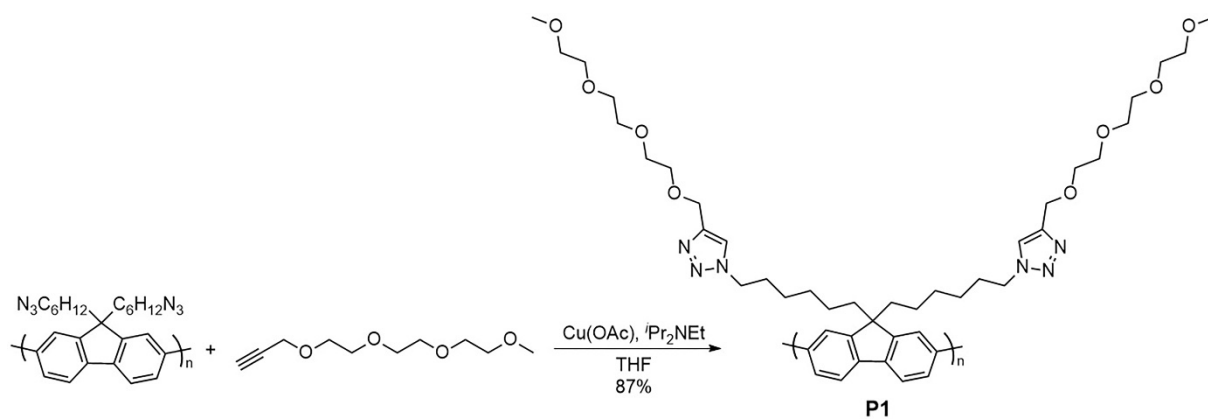
Scheme S3: Synthesis of **PF-N₃** [1].



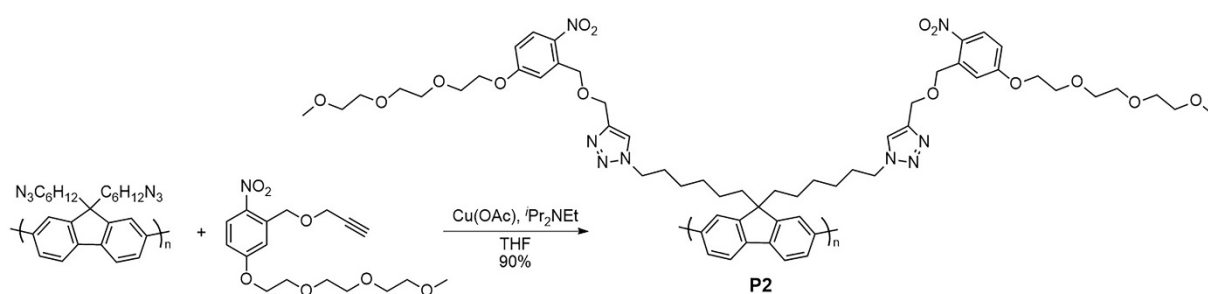
Scheme S4: Synthesis of **oNB-TEG-alkyne** [2,3].



Scheme S5: Synthesis of **TEG-alkyne** [4].



Scheme S6: Synthesis of PF-TEG (P1).



Scheme S7: Synthesis of PF-oNB-TEG (P2).

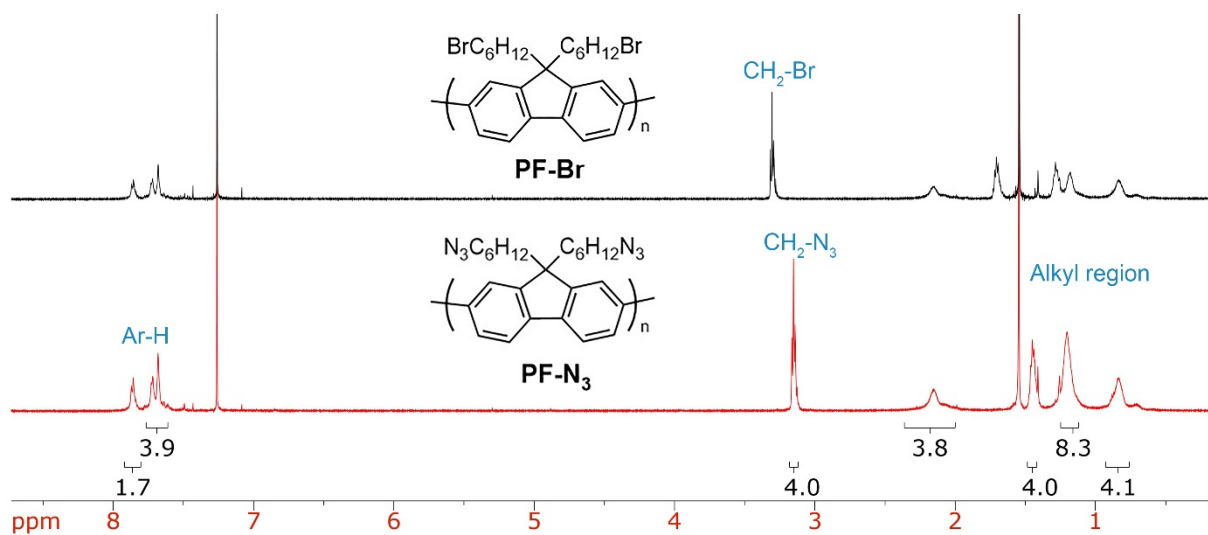


Figure S1. ^1H NMR overlay of PF-Br (top) and PF- N_3 (bottom).

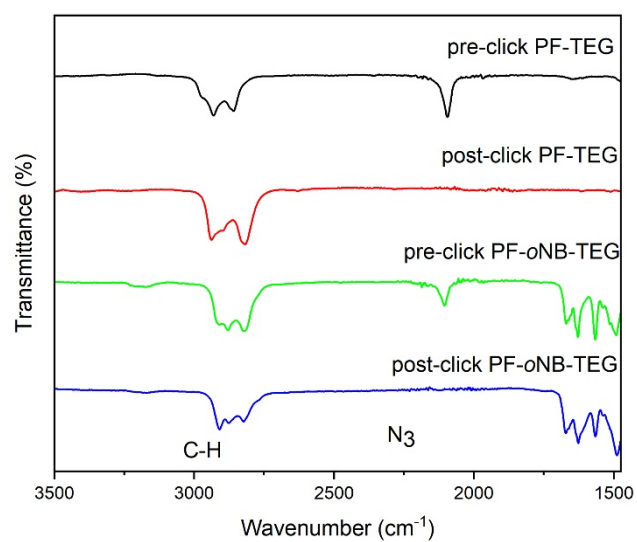


Figure S2. FT-IR overlay of the click reaction between **PF-N₃**, TEG-alkyne and oNB-TEG-alkyne.

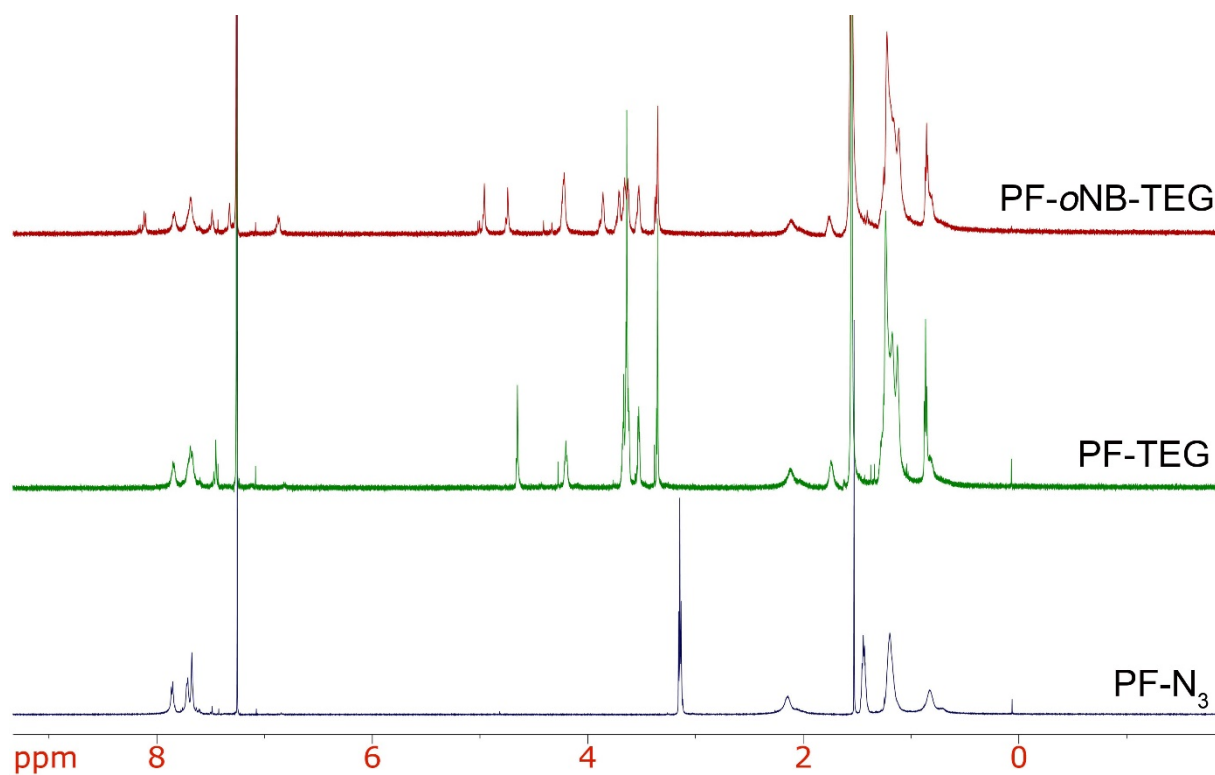


Figure S3: ¹H NMR overlay of **PF-N₃** (bottom), **PF-TEG** (middle) and **PF-oNB-TEG** (top).

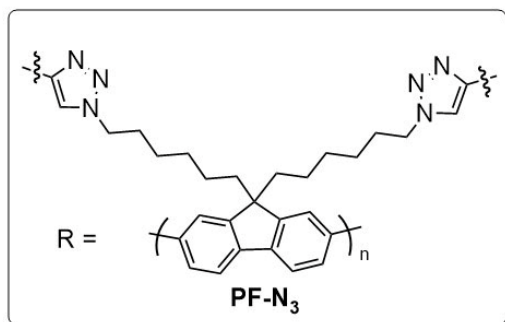


Figure S4: Photoisomerization mechanism of **PF-oNB-TEG**. Adapted from reference [2]

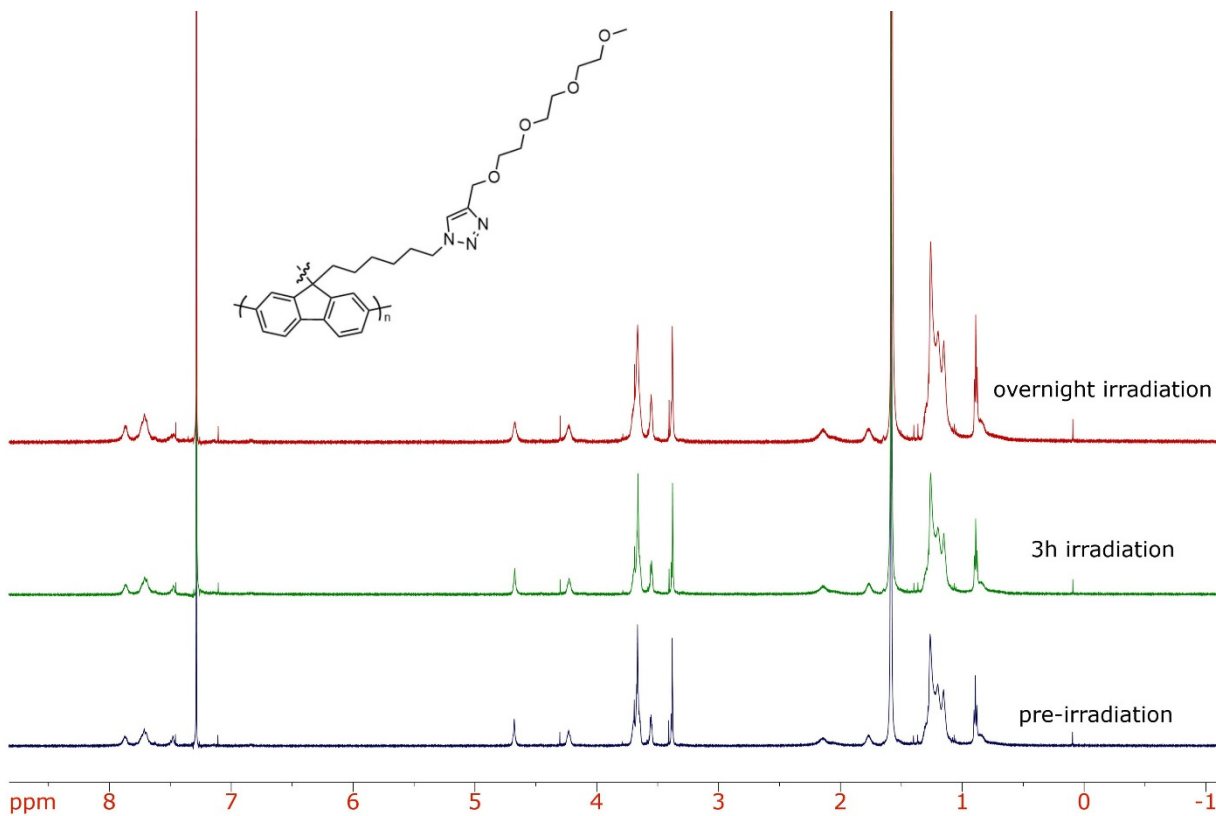


Figure S5. ^1H NMR overlay of **PF-TEG** before irradiation (bottom), after 3 hours of irradiation (middle) and after overnight irradiation (top).

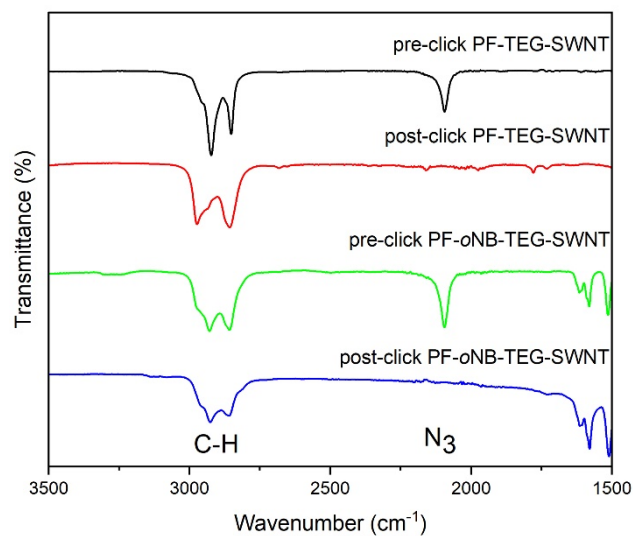


Figure S6. FT-IR overlay of the click reaction between the **PF-N₃-SWNT** complex, TEG-alkyne and oNB-TEG-alkyne.

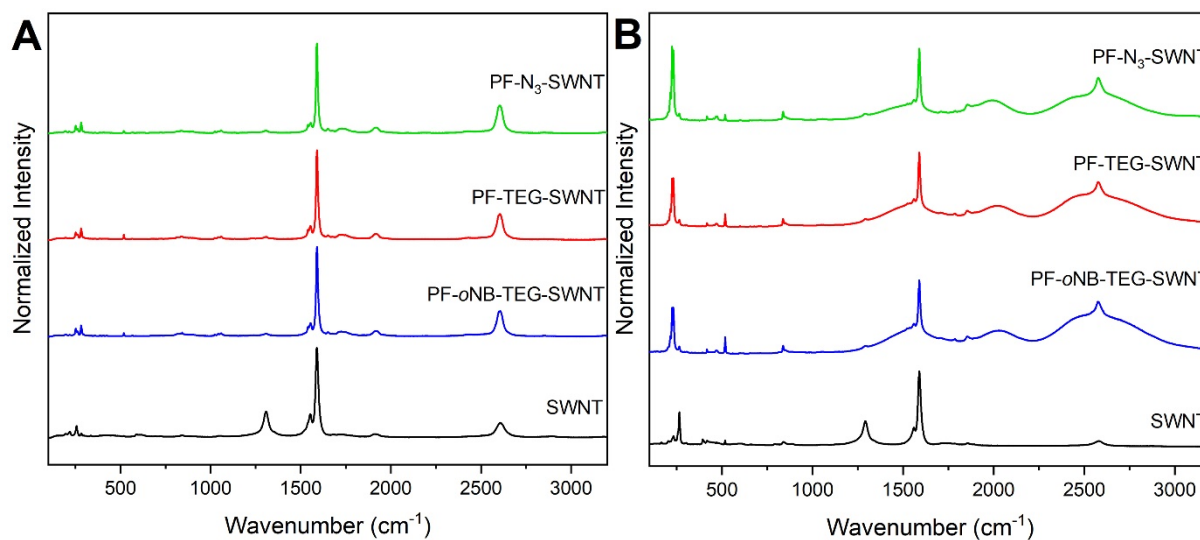


Figure S7: Full Raman spectra for HipCo polymer-SWNT samples at A) $\lambda_{\text{ex}} = 633$ nm, B) $\lambda_{\text{ex}} = 785$ nm. All the spectra were normalized at ~ 1590 cm^{-1} .



Figure S8. Photograph of a **PF-SWNT** thin film.

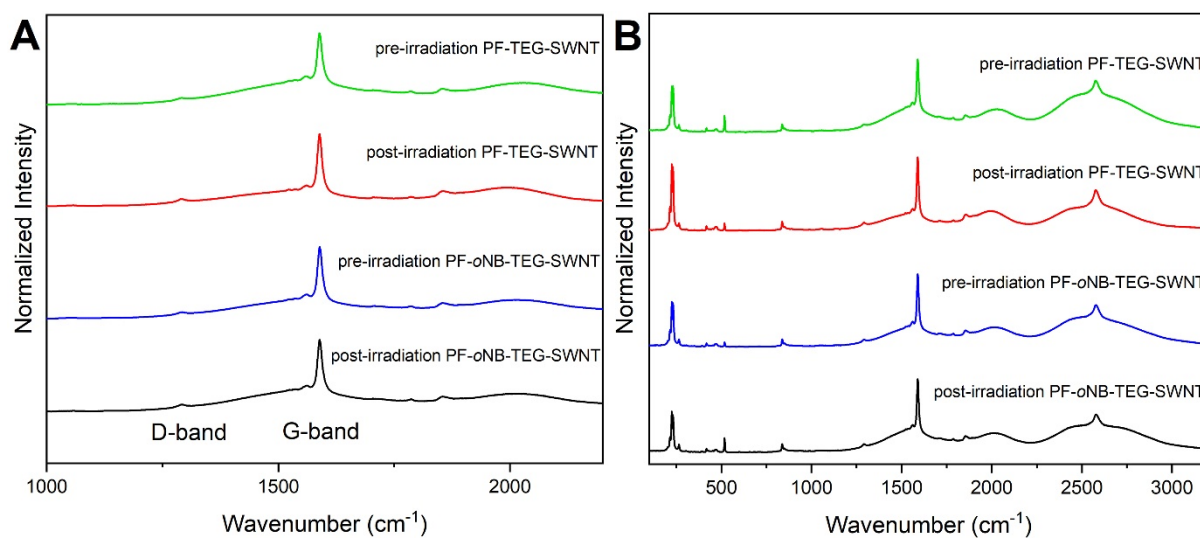


Figure S9. Full Raman spectra for **PF-TEG-SWNT** and **PF-oNB-TEG-SWNT** pre- and post-irradiation at A) $\lambda_{\text{ex}} = 785$ nm. All the spectra were normalized at ~ 1590 cm^{-1} .

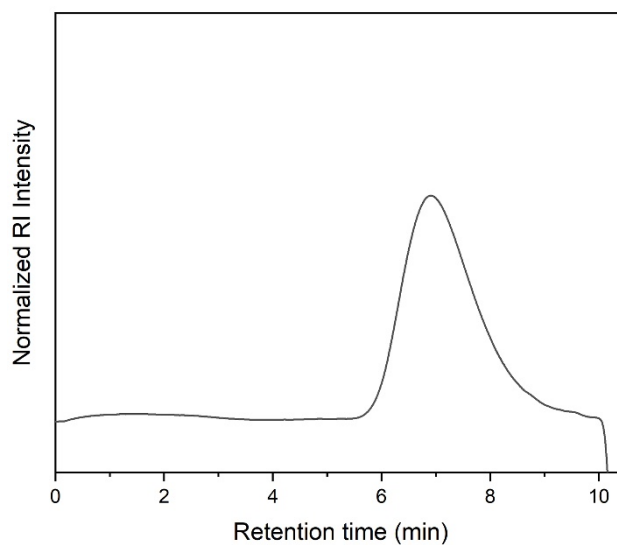


Figure S10. GPC trace of **PF-Br**.



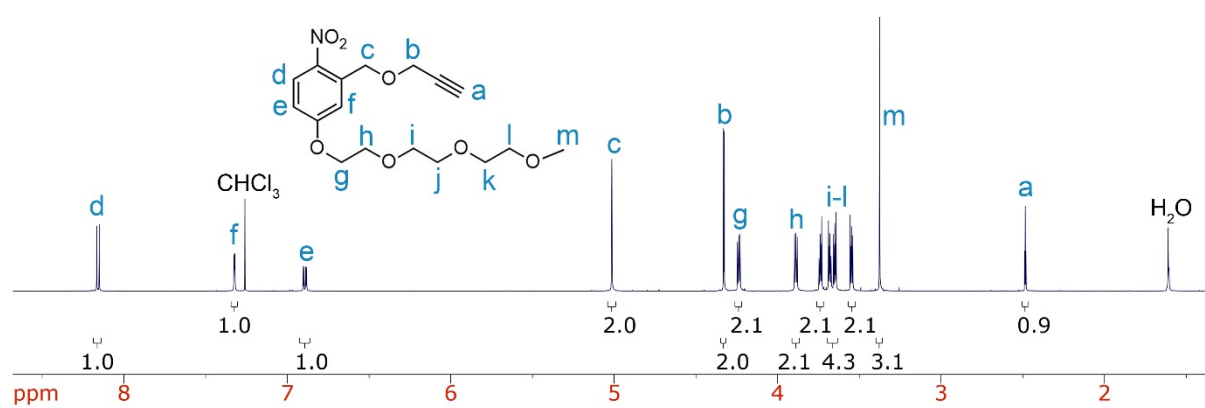


Figure S14a. ¹H NMR spectrum of **oNB-TEG-alkyne**.

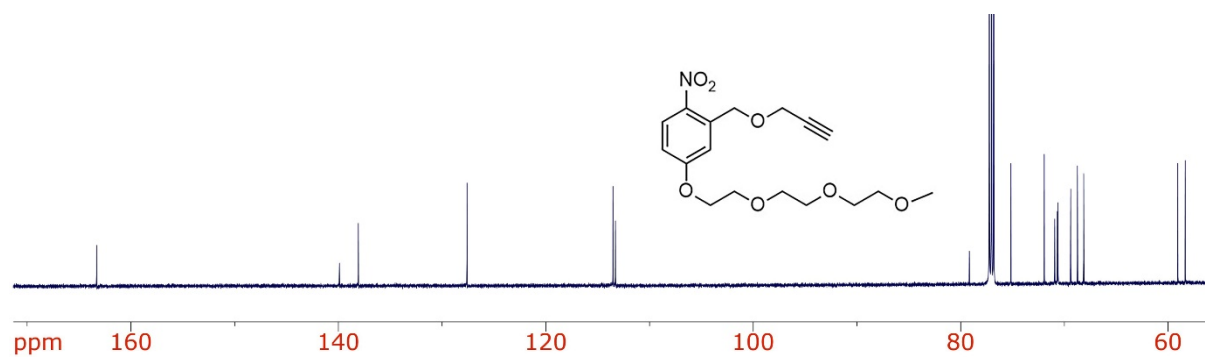


Figure S14b. ¹³C NMR spectrum of compound **oNB-TEG-alkyne** in CDCl₃.

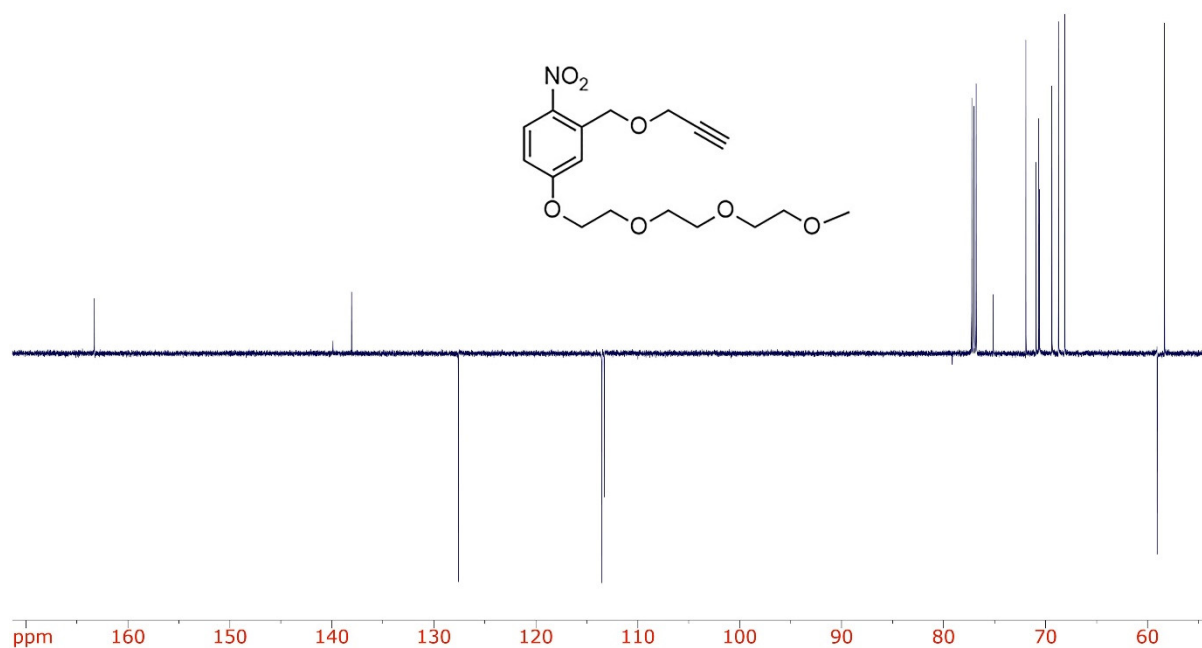


Figure S14c. DEPT NMR of compound **oNB-TEG-alkyne** CDCl_3 .

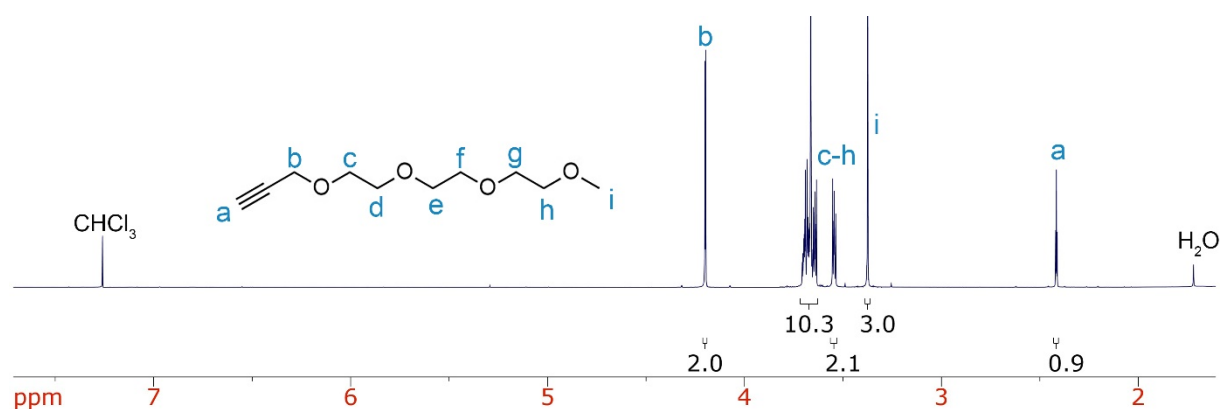


Figure S15. ^1H NMR spectrum of **TEG-alkyne**.

1. Fong, D.; Yeung, J.; Meichsner, E.; Adronov, A. Reactive, Aqueous-Dispersible Polyfluorene-Wrapped Carbon Nanotubes Modulated with an Acidochromic Switch via Azide-Alkyne Cycloaddition. *ACS Appl. Polym. Mater.* **2019**, *1*, 797–803, doi:10.1021/acsapm.9b00040.
2. Chan, E.W.C.; Baek, P.; Tan, S.M.; Davidson, S.J.; Barker, D.; Travas-Sejdic, J. Molecular “Building Block” and “Side Chain Engineering”: Approach to Synthesis of Multifunctional and Soluble Poly(Pyrrole Phenylene)s. *Macromol. Rapid Commun.* **2019**, *40*, 1–6, doi:10.1002/marc.201800749.
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Membranes Based on Photocleavable Columnar Liquid Crystals – Selective Adsorption of Ionic Dyes. *Eur. Polym. J.* **2020**, *134*, 109859, doi:10.1016/j.eurpolymj.2020.109859.

4. Chandra, P.; Jonas, A.M.; Fernandes, A.E. Sequence and Surface Confinement Direct Cooperativity in Catalytic Precision Oligomers. *J. Am. Chem. Soc.* **2018**, *140*, 5179–5184, doi:10.1021/jacs.8b00872.