Supplementary Information

Emergence of new red-shifted carbon nanotube photoluminescence based on proximal doped-site design

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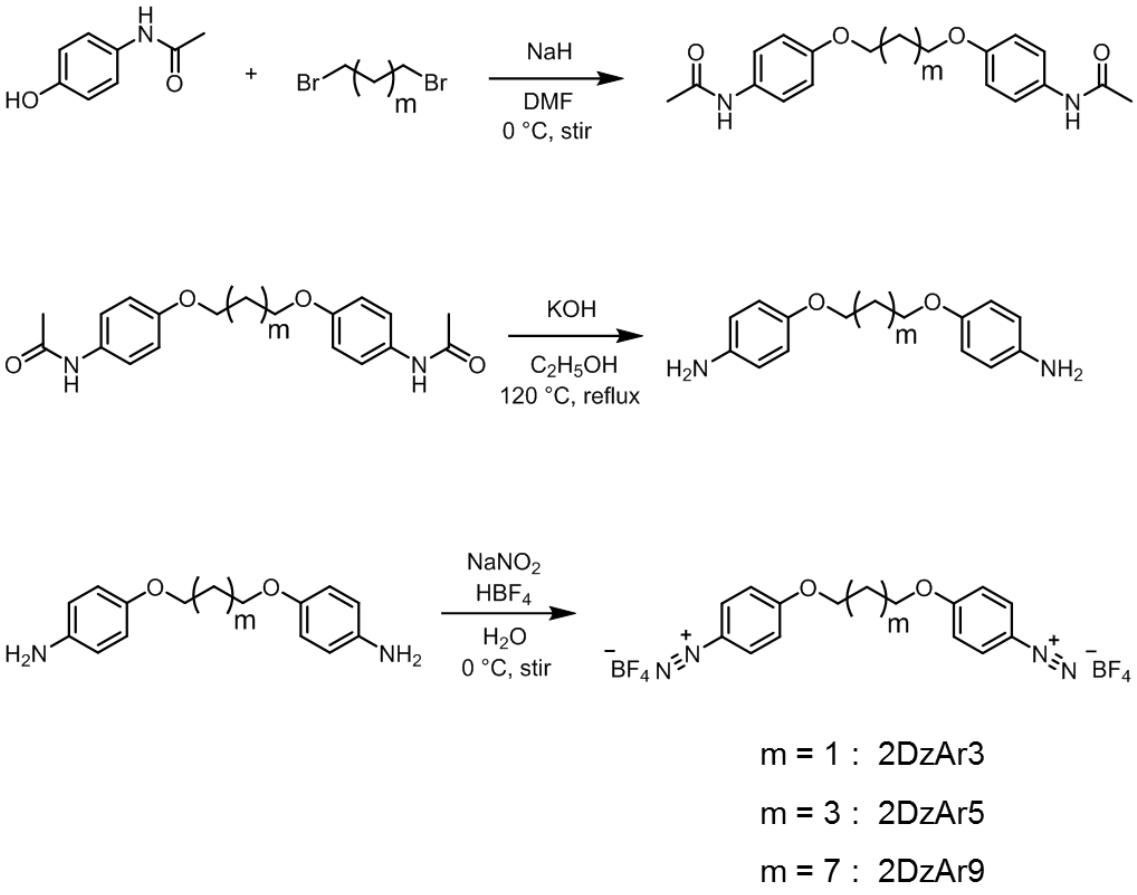

Figure S1. Synthetic routes of the 2DzArn (n = 3, 5 and 9).

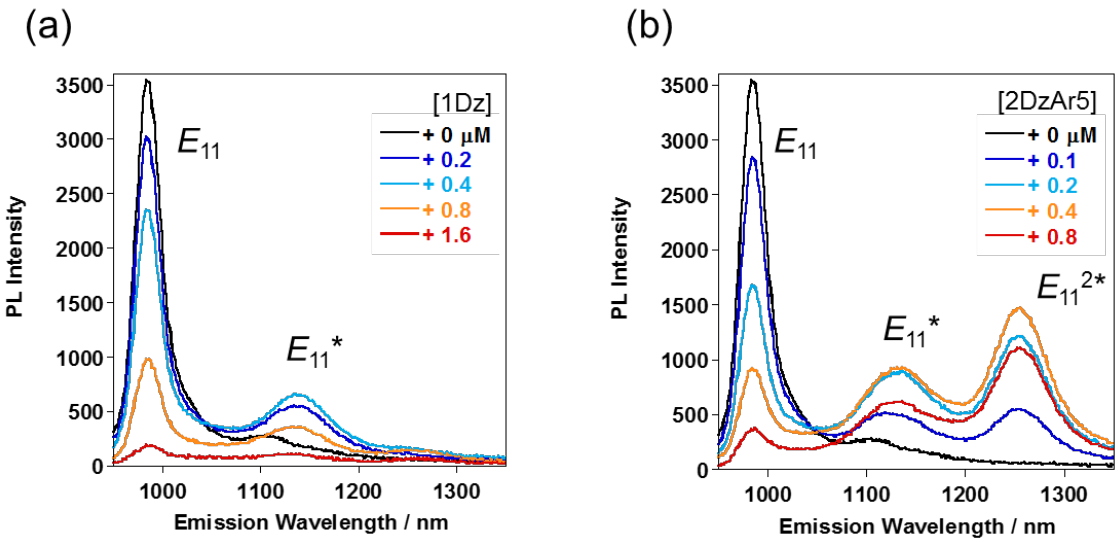

Figure S2. PL spectral changes of (a) SWNT/1Dz and (b) SWNT/2DzAr5 with respect to concentrations of the added diazonium compounds.

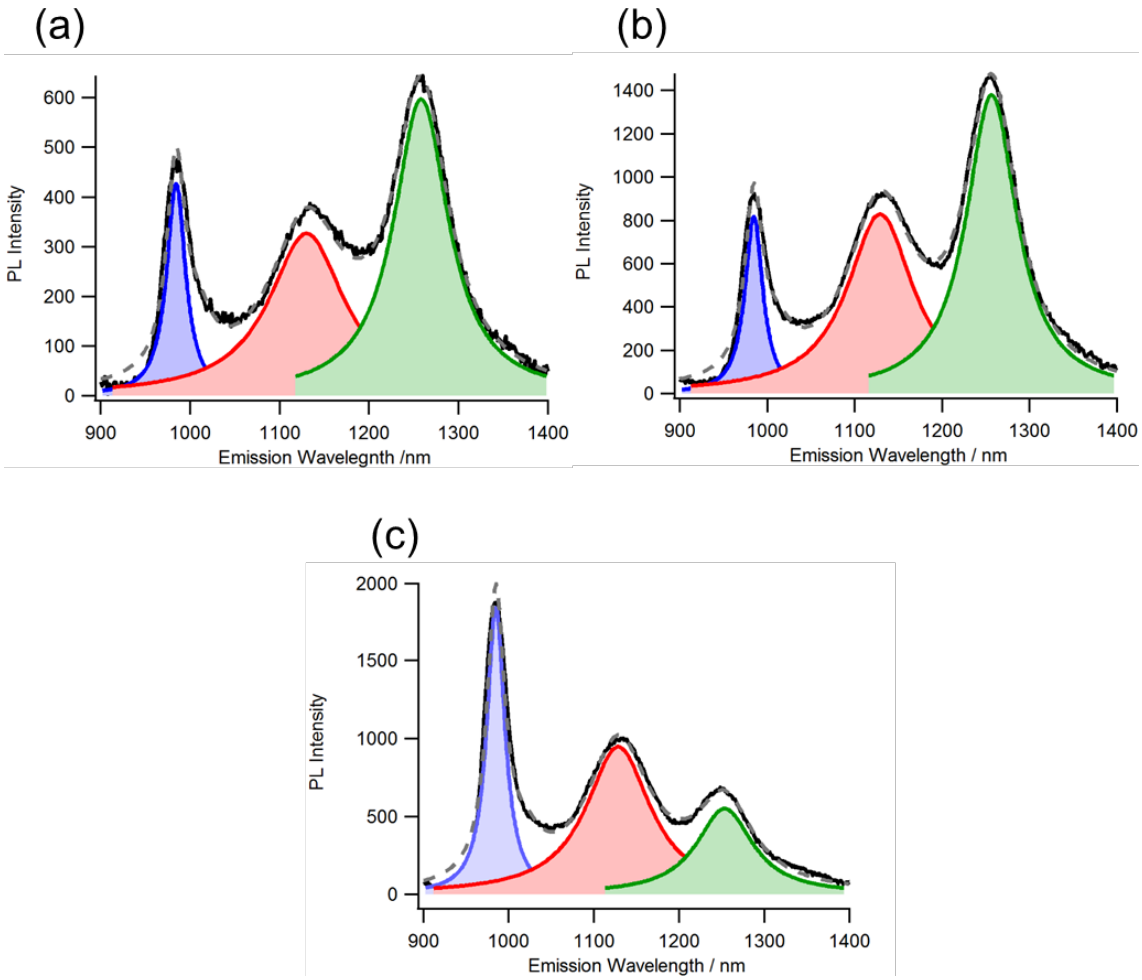

Figure S3. Deconvoluted PL spectra of (a) SWNT/2DzAr3, (b) SWNT/2DzAr5 and (c) SWNT/2DzAr9 in D_2O. [2DzArn] = 0.4 μM.

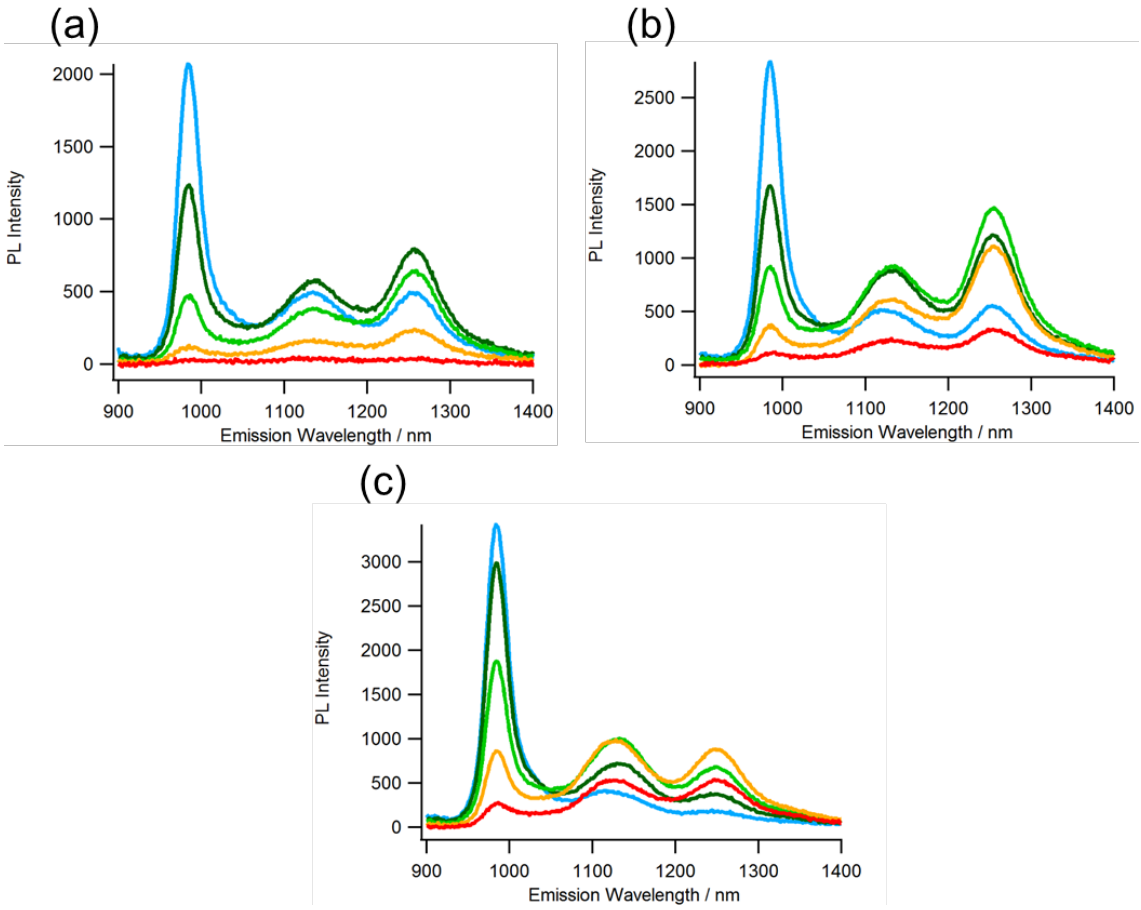

Figure S4. PL spectra of (a) SWNT/2DzAr3, (b) SWNT/2DzAr5 and (c) SWNT/2DzAr9 prepared by using different concentrations of 2DzArn: [2DzArn] = 0.10 (light blue), 0.20 (dark green), 0.40 (bright green), 0.80 (orange) and 1.6 μM (red).

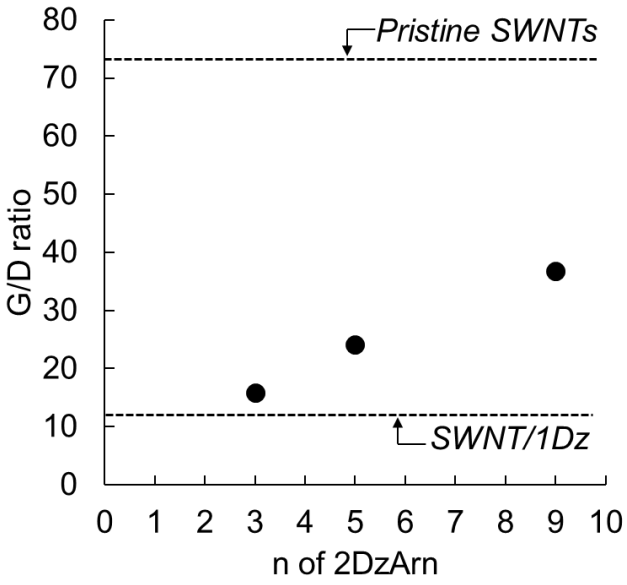

Figure S5. G/D ratios of SWNT/2DzArn, SWNT/1Dz and pristine SWNTs. The laser light with 570 nm was utilized for excitation and was irradiated to the D_2O dispersion samples. [2DzArn] = 0.4 μM and [1Dz] = 0.8 μM was used for chemical modification to prepare the same concentrations based on the diazonium group.

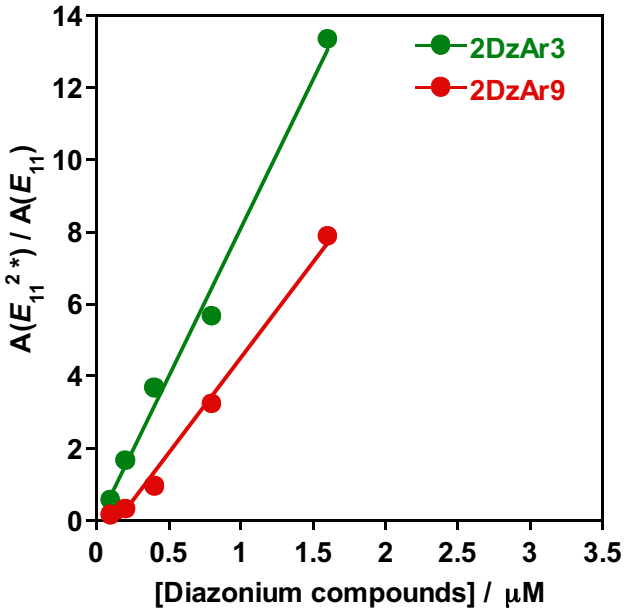

Figure S6. Integrated area ratio of $E_{11}{}^{2}$* to E_{11}* as a function of the diazonium concentrations for SWNT/2DzAr3 (green dot) and SWNT/2DzAr9 (red dot).

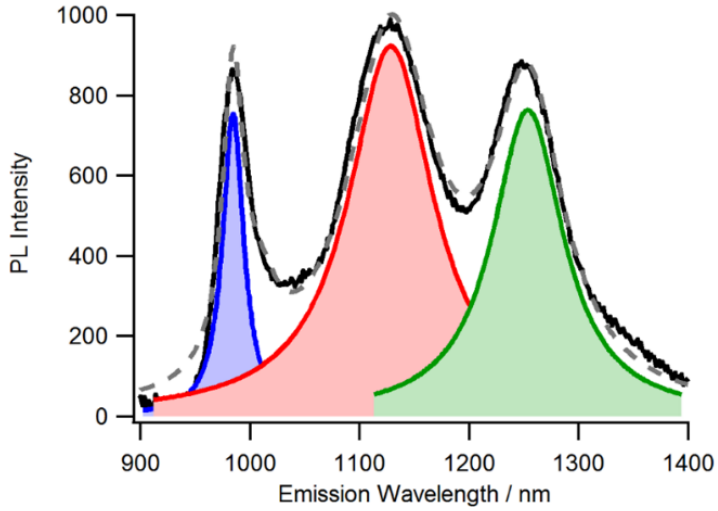

Figure S7. PL spectrum of SWNT/2DzAr9 prepared by using 0.80 μM 2DzAr9.