Supporting Information

Improvement of Brightness, Color Purity, and Operational Stability of Electrochemiluminescence Devices with Diphenylanthracene Derivatives

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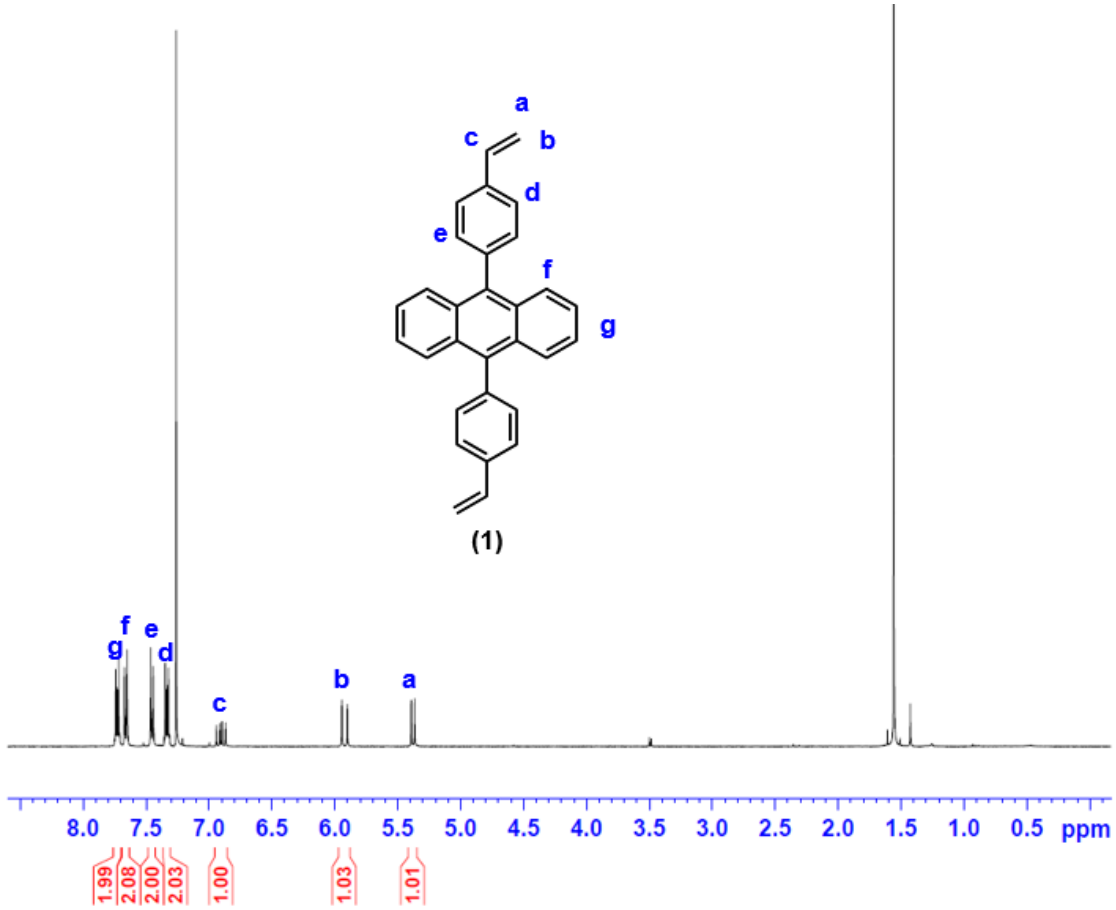

Fig. S1 ^{1}H-NMR spectrum of species **1**.

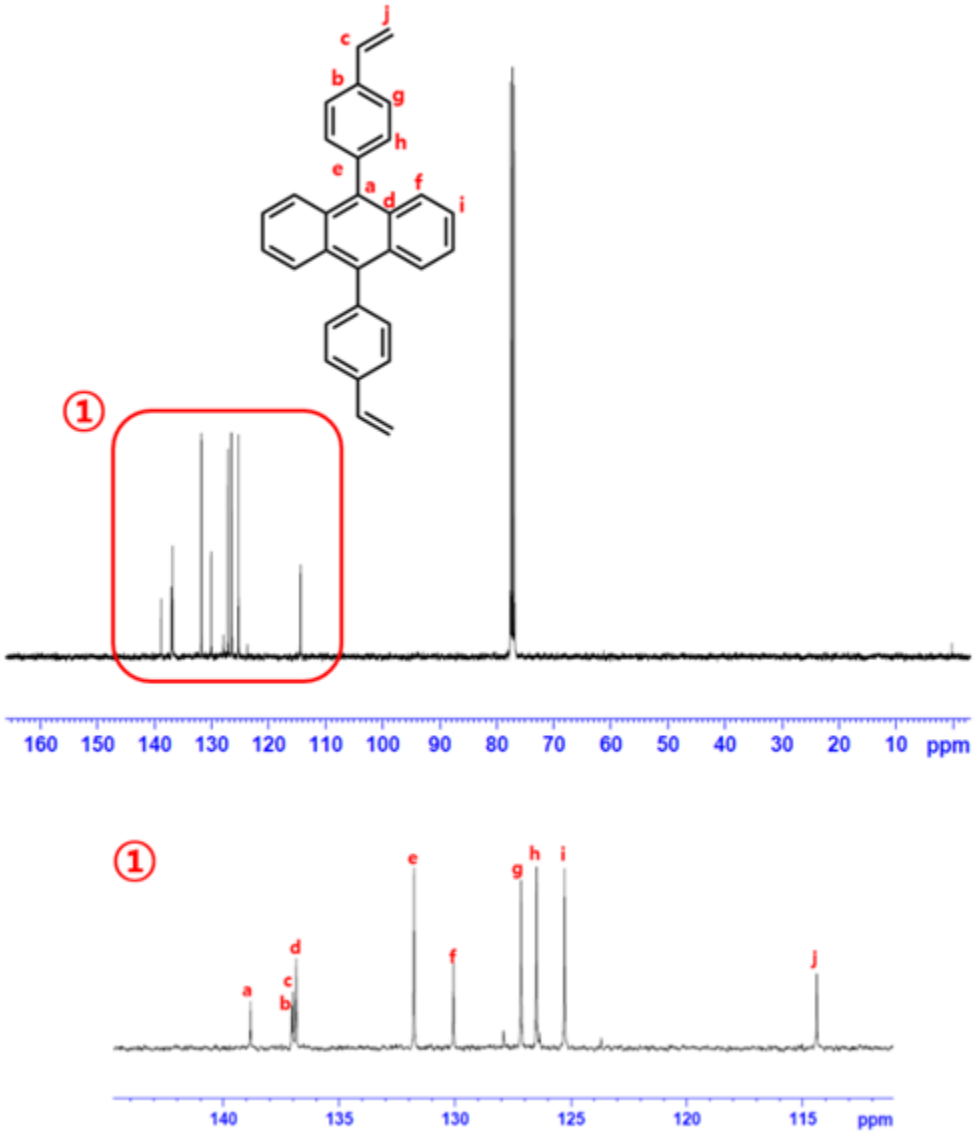

Fig. S2 ^{13}C-NMR spectrum of species **1**.

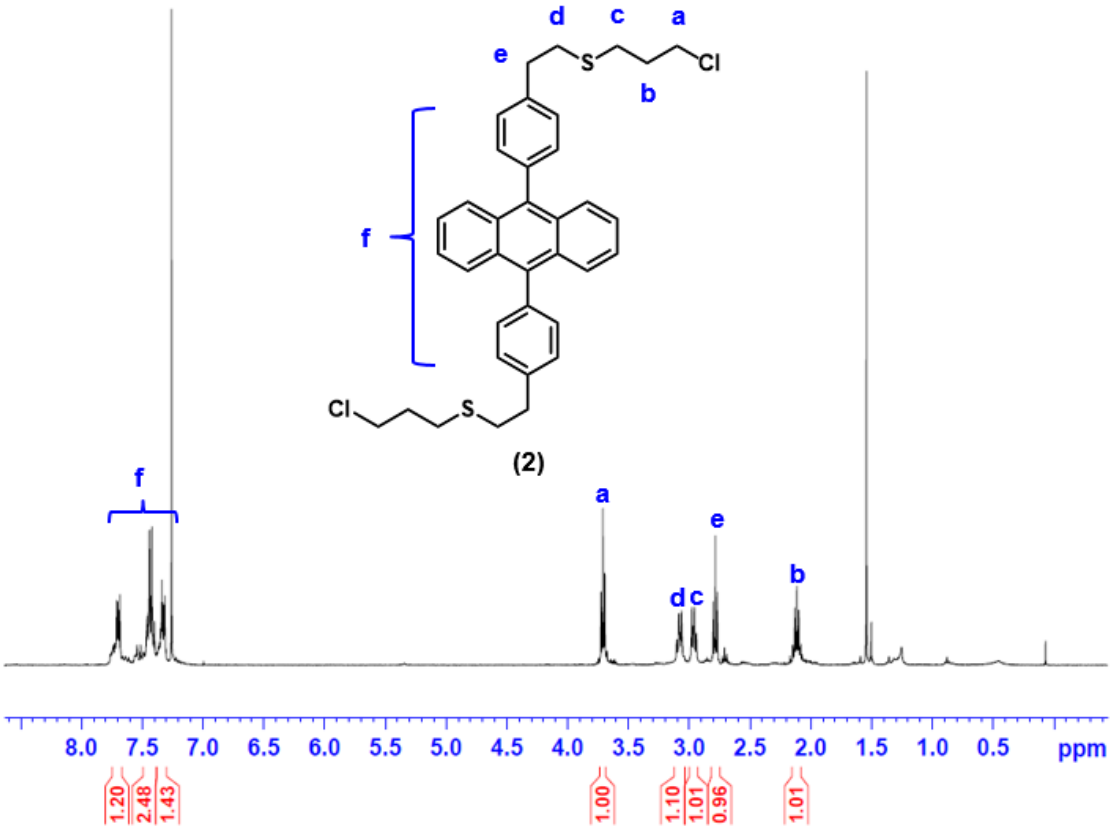

Fig. S3 ^{1}H-NMR spectrum of species **2**.

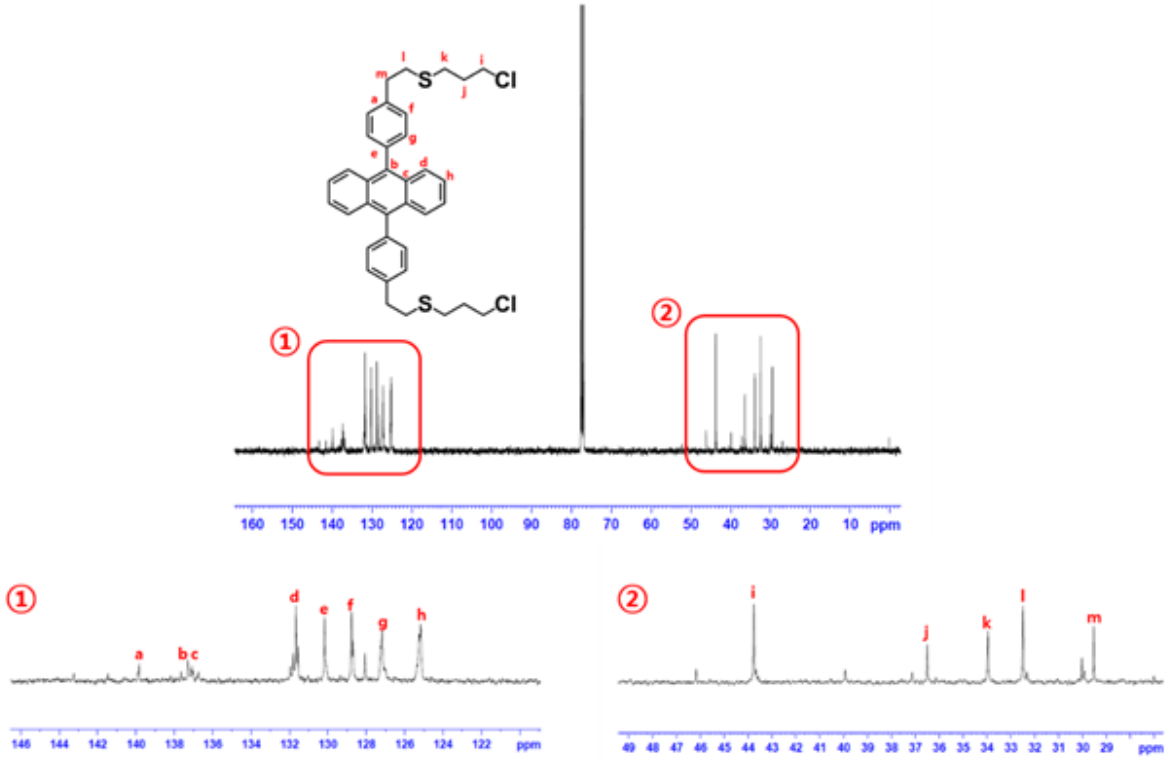

Fig. S4 ^{13}C-NMR spectrum of species **2**.

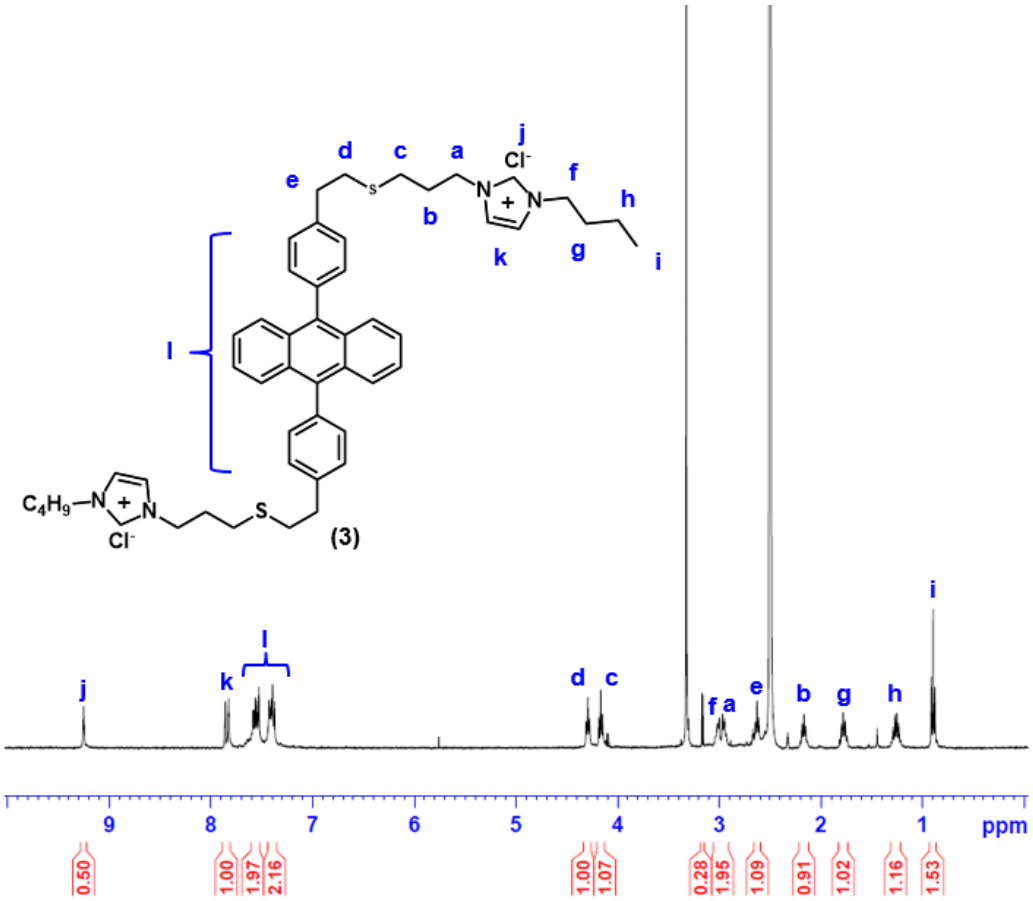

Fig. S5 ^{1}H-NMR spectrum of species **3**.

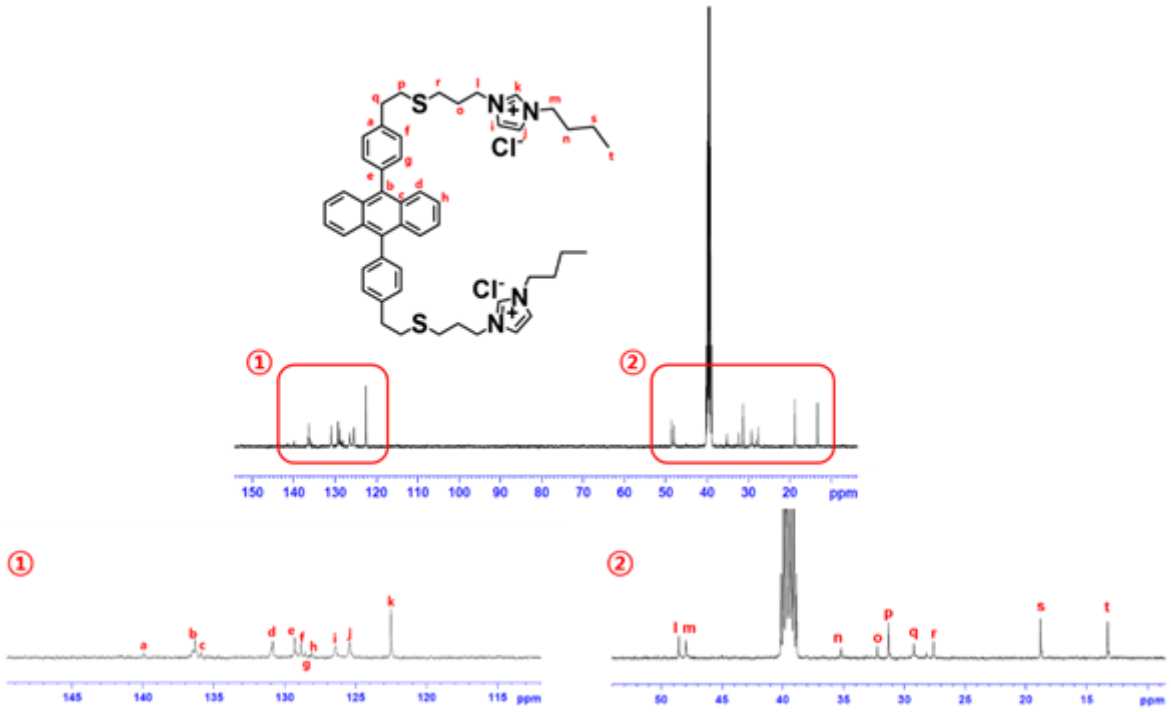

Fig. S6 ^{13}C-NMR spectrum of species **3**.

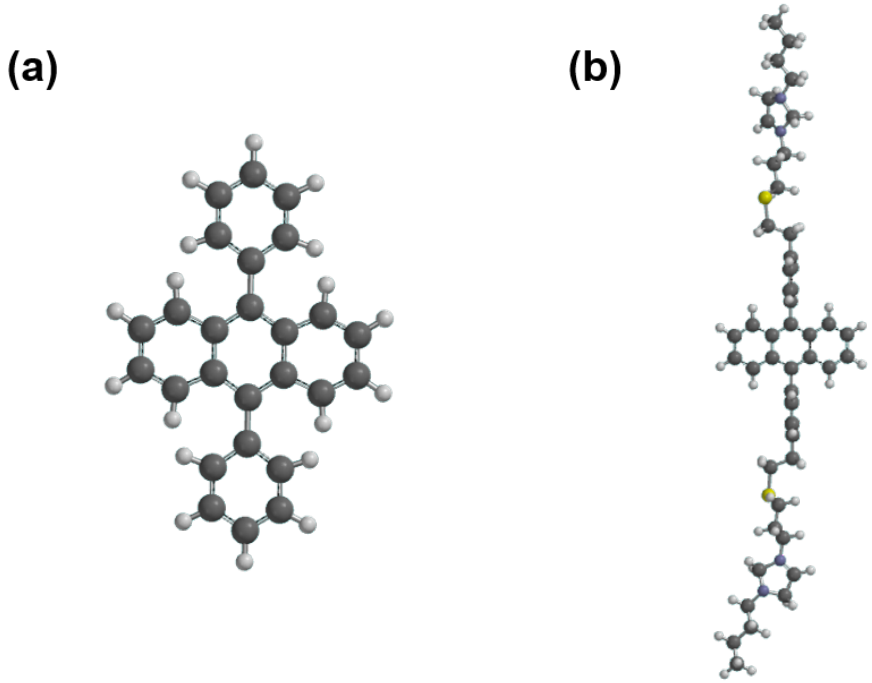

Fig. S7 Optimized molecular structures of (a) DPA and (b) I-DPA simulated by density functional theory (DFT, B3LYP method with 6-31G*). Dihedral angles between a center of anthracene and both linked phenyl rings of I-DPA and DPA were estimated as 80° and 0°, respectively, implying the co-planarity of I-DPA is further broken than DPA.

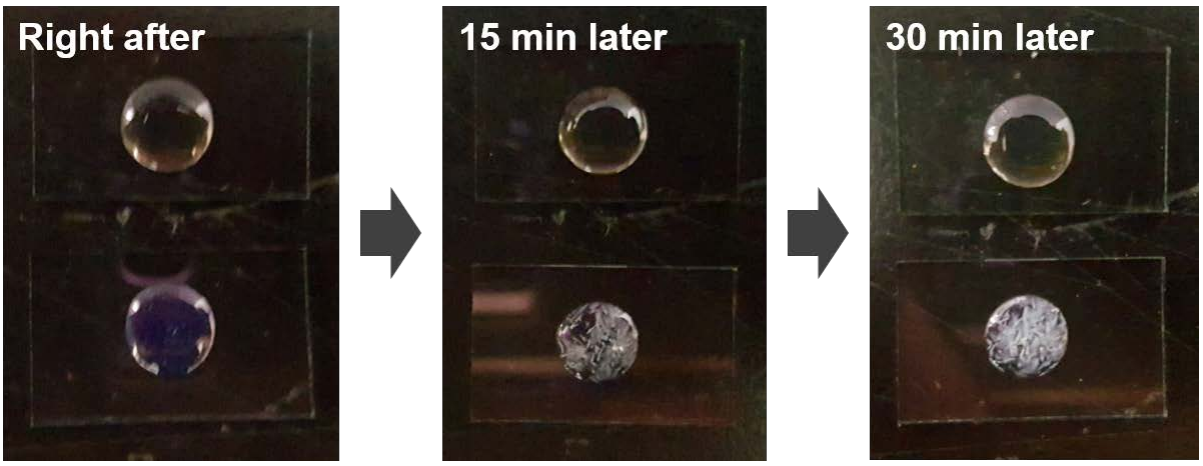

Fig. S8 Photographs of ECL gels containing I-DPA (top) and DPA (bottom) at 25 ^{o}C as a function of time. The homogeneous I-DPA and DPA gels were prepared at 25 ^{o}C and 80 ^{o}C, respectively, for full dissolution of polyvinylacetate (PVAc, M_w = 500k). However, when each ECL gel was placed on ITO-coated glasses (electrodes) at 25 ^{o}C for device fabrication, the gel with the DPA became turbid due to poor compatibility between DPA and PVAc. Therefore, only I-DPA could be used for the fabrication of gel-based ECL devices at room temperature.