**数据收集示例**

**Materials and Methods (General Information)**

All manipulations were carried out using standard Schlenk, high-vacuum and glovebox techniques. THF, Et2O, 1,4-dioxane, and toluene were distilled from sodium benzophenone ketyl prior to use. Iron(II) chloride (99.99%) and EtMgBr (1.0 M in THF) was purchased from Sigma-Aldrich and used as received. The alkynes and silanes used for hydrosilylation which were commercially available were purchased from Sigma-Aldrich, Alfa Aesar, Acros, or TCI, and the other alkynes were synthesized according to reported procedures. Alkynes and silanes were dried over LiAlH4 or CaH2 and distilled prior to use. All the iron-catalyzed hydrosilylation reaction was performed in an argon-filled glovebox and all chemicals and apparatus used in this reaction were thoroughly dried before use.

Melting points were measured on a RY-I apparatus and uncorrected. Infrared spectra were recorded on a Bruker Fourier transform spectrometric (FT-IR) and reported in wave number. High resolution mass spectrometric (HRMS) analyses spectra were determined on an IonSpec FT-ICR mass spectrometer and Waters GCT Premier mass spectrometer. Trace metal contamination analyses of iron precatalysts by ICP-OES (spectro-blue) were performed using a X7 (Thermo Electron Corporation) instruments. Magnetic moment was measured on SQUID VSM (Quantum Design). 1H NMR, 13C NMR, 29Si NMR spectra were recorded with a Bruker AV 400 spectrometer at 400 MHz (1H NMR), 101 MHz (13C NMR), 79 MHz (29Si NMR), and 376 MHz (19F NMR). Chemical shifts were reported in ppm down field from internal Me4Si (1H NMR) and CDCl3 (13C NMR). Gas Chromatography (GC) analyses were performed using a Hewlett Packard Model HP 7890 Series instruments equipped with an FID detector and a capillary column, HP-5 (Agilent Technologies, 30 m × 0.032 mm × 0.25 μm film thickness). Electron paramagnetic resonance (EPR) spectra were recorded on a Bruker ELEXSYS E580 spectrometer (X-band). The molar masses and their distribution for the polymer samples were determined by GPC on a Waters system equipped with a set of three Ultrastyragel columns HT2 30 cm x 7.8 mm; 10 µm particles; exclusion limits: 100-10000 g/mol, respectively), THF was used as the mobile phase (1 mL/min), and polystyrene samples as the standards in the calibration of the molar masses.

**Synthesis of 2,9-bis((2,4,6-triisopropylphenyl)ethynyl)-1,10-phenanthroline (L1k)**



A suspension of 2,9-dichloro-1,10-phenanthroline (1.0 g, 4 mmol), Pd(PPh3)4 (231 mg, 0.2 mmol,), CuI (76 mg, 0.4 mmol) and aryl acetylene (2.0 g, 8.8 mmol) were added into a 125 mL sealing pipe, then charged with argon. After that, Et3N (8 mL) and anhydrous THF (24 mL) were injected through a syringe. The mixture was heated up to 90 °C until the reaction was finished. After cooling to room temperature, the mixture was neutralized with saturated NH4Cl (aq., 50 mL) and extracted with CH2Cl2 (100 mL × 3). The combined organic layer was dried over anhydrous MgSO4 and concentrated under reduced pressure. The residue was purified by silica-gel column chromatography with PE/EA = 20:1 (*v*/*v*) as eluent and precipitated in *n*-hexane/CH2Cl2 (20:1, *v*/*v*) through slow evaporation to give **L1k**.

Series number: ZZ-01-12，1.82 g, 72% yield, white solid, melting point: 203 – 207 ℃.

1H NMR (400 MHz, CDCl3) δ 8.21 (d, *J* = 8.2 Hz, 2H), 7.82 (d, *J* = 8.2 Hz, 2H), 7.78 (s, 2H), 7.05 (s, 4H), 3.81 (hept, *J* = 6.9 Hz, 4H), 2.93 (hept, *J* = 6.9 Hz, 2H), 1.36 (d, *J* = 6.9 Hz, 24H), 1.29 (d, *J* = 6.9 Hz, 12H).

13C NMR (101 MHz, CDCl3) δ 151.8, 150.1, 145.7, 144.7, 135.9, 127.6, 127.0, 126.5, 120.5, 117.5, 97.2, 89.2, 34.6, 31.9, 23.9, 23.6.

HRMS (ESI) calcd for [M+H, C46H53N2]+: 633.4203, found 633.4207.

**2,9-bis((2,4,6-triisopropylphenyl)ethynyl)-1,10-phenanthroline (L1k)**



