Supporting Information
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Supporting information

Copper-catalyzed three-component one-pot synthesis of substituted 2-aryl-1,3-benzoselenazoles

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1. General method.

Dimethylsulfoxide (DMSO), benzaldehyde was purified through classical method \textsuperscript{1}, other starting materials, reagent and catalysts were obtained commercially, and without further purification. The reactions were monitored by thin-layer chromatography (TLC), Flash column chromatography was performed with silica gel (200 - 300 mesh) purchased from Qingdao Haiyang Chemical Co. Ltd. The \textsuperscript{1}H NMR and \textsuperscript{13}C NMR spectra were recorded with TMS as the internal standard on a BrukerBioSpin GmbH 400 MHz spectrometer. The coupling constants were given in Hz. High-resolution mass spectra were obtained with a Shimadazu LCMS-IT-TOF mass-spectrometer. The GC-MS spectra were acquired on Thermo Trace DSQ II.

1.1 General procedure for the synthesis of 2-aryl-1,3-benzoselenazoles 3aa. To a solution of 2-idoaniline (0.5 mmol) and benzaldehyde (0.6 mmol) in dry DMSO (1.5 mL), selenium powder (1.5 mmol), catalyst (0.05 mmol) and KOH (1.0 mmol) were added, the reaction mixture was stirred in a sealed tube under argon atmosphere at 120 ºC for 36 h. After the reaction was finished, the mixture was cooled to room temperature, diluted with saturated aq NH\textsubscript{4}Cl (15 mL) and extracted with ethyl acetate
(3 × 10 mL). The organic layer was dried over Na₂SO₄ and the solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography to afford the corresponding product 3aa.

2-phenylbenzo[1,3]selenazole (3aa). Purified by flash chromatography (petroleum ether / ethyl acetate = 150 / 1), white solid. M.p. = 116.2 - 117.1 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.12 (d, J = 8.0 Hz, 1H), 8.06-7.98 (m, 2H), 7.94 (d, J = 7.8 Hz, 1H), 7.50-7.46 (m, 4H), 7.31 (t, J = 7.5 Hz, 1H). ¹³C NMR (101 MHz, CDCl₃) δ 172.47, 155.85, 138.33, 136.20, 131.03, 129.06, 128.01, 126.39, 125.26, 124.86, 124.82. HRMS m/z [M+H]^+ Calcd for C₁₃H₁₀NSe: 259.9973, found: 259.9948.

2-(4-nitrophenyl)benzo[1,3]selenazole (3ab). Purified by flash chromatography (petroleum ether / ethyl acetate = 75 / 1), yellow solid. M.p. = 125.0 - 127.2 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.33 (d, J = 8.7 Hz, 2H), 8.25 - 8.04 (m, 3H), 7.98 (d, J = 7.8 Hz, 1H), 7.54 (t, J = 7.6 Hz, 1H), 7.38 (t, J = 7.1 Hz, 1H). ¹³C NMR (101 MHz, CDCl₃) δ 169.11, 155.71, 149.01, 141.59, 139.05, 128.60, 126.92, 126.21, 125.59, 124.97, 124.31. HRMS m/z [M+H]^+ Calcd for C₁₃H₉N₂O₂Se: 304.9824, found: 304.9806.

2-(3-nitrophenyl)benzo[1,3]selenazole (3ac). Purified by flash chromatography (petroleum ether / ethyl acetate = 75 / 1), yellow solid. M.p. =148.5-150.6 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.85 (t, J = 1.9 Hz, 1H), 8.38 – 8.29 (m, 2H), 8.16 (dd, J = 8.1, 0.7 Hz, 1H), 7.98 (dd, J = 8.0, 0.7 Hz, 1H), 7.67 (t, J = 8.0 Hz, 1H), 7.54 (ddd, J = 8.3, 7.3, 1.2 Hz, 1H), 7.41 – 7.34 (m, 1H). ¹³C NMR (101 MHz, CDCl₃) δ 169.06, 155.54, 148.78, 138.71, 137.83, 133.35, 130.06, 126.84, 126.04, 125.39, 125.15,
124.95, 122.63. HRMS m/z [M+H]^+ Calcd for C_{13}H_{9}N_{2}O_{2}Se: 304.9824, found: 304.9807.

6-chloro-2-phenylbenzo[d][1,3]selenazole (3ba). Purified by flash chromatography (petroleum ether / ethyl acetate = 125 / 1), white solid. M.p. = 136.8 - 138.9 °C; \(^1\)H NMR (400 MHz, CDCl\(_3\)) \(\delta\) 8.07 - 7.93 (m, 3H), 7.90 (d, J = 2.1 Hz, 1H), 7.55 - 7.40 (m, 4H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) \(\delta\) 172.85, 154.39, 139.35, 135.81, 131.29, 131.15, 129.14, 127.99, 127.11, 125.37, 124.41. HRMS m/z [M+H]^+ Calcd for C_{13}H_{9}ClNSe: 293.9581, found: 293.9573.

5-chloro-2-phenylbenzo[d][1,3]selenazole (3ca). Purified by flash chromatography (petroleum ether / ethyl acetate = 125 / 1), white solid. M.p. = 145.7 - 147.2 °C; \(^1\)H NMR (400 MHz, CDCl\(_3\)) \(\delta\) 8.09 (d, J = 2.0 Hz, 1H), 8.00 (dt, J = 4.0, 2.4 Hz, 2H), 7.84 (d, J = 8.5 Hz, 1H), 7.52 - 7.45 (m, 3H), 7.29 (dd, J = 8.5, 2.1 Hz, 1H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) \(\delta\) 174.47, 156.77, 136.36, 135.85, 132.41, 131.41, 129.14, 128.05, 125.55, 125.47, 124.61. HRMS m/z [M+H]^+ Calcd for C_{13}H_{9}ClNSe: 293.9581, found: 293.9576.

6-fluoro-2-phenylbenzo[d][1,3]selenazole (3da) Purified by flash chromatography (petroleum ether / ethyl acetate = 125 / 1), white solid. M.p. = 119.0 - 121.1 °C; \(^1\)H NMR (400 MHz, CDCl\(_3\)) \(\delta\) 8.03 (dd, J = 8.9, 4.9 Hz, 1H), 8.00 - 7.91 (m, 2H), 7.61 (dd, J = 7.9, 2.6 Hz, 1H), 7.53 - 7.43 (m, 3H), 7.21 (td, J = 8.8, 2.6 Hz, 1H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) \(\delta\) 171.80 (d, J = 3.2 Hz), 160.30 (d, J = 247.4 Hz), 152.54 (d, J = 1.9 Hz), 139.17 (d, J = 10.1 Hz), 135.92, 131.09, 129.11, 127.90, 125.51 (d, J = 9.1
Hz), 114.73 (d, J = 24.3 Hz), 111.17 (d, J = 26.0 Hz). HRMS m/z [M+H]^+ Calcd for C_{13}H_{15}FNSe: 277.9867, found: 277.9879.

2-(p-tolyl)benzo[d][1,3]selenazole (3ae). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), white solid. M.p. = 80.3 - 82.1 °C; ^1H NMR (400 MHz, CDCl$_3$) δ 8.10 (dd, J = 8.1, 0.7 Hz, 1H), 7.96 - 7.88 (m, 3H), 7.49 (td, J = 8.2, 7.3, 1.2 Hz, 1H), 7.34 - 7.27 (m, 3H), 2.43 (s, 3H). ^13C NMR (101 MHz, CDCl$_3$) δ 172.55, 155.91, 141.50, 138.19, 133.61, 129.75, 127.95, 126.32, 125.08, 124.78, 124.67, 21.51. HRMS m/z [M+H]^+ Calcd for C$_{14}$H$_{12}$NSe: 274.0130, found: 274.0135.

2-(4-methoxyphenyl)benzo[d][1,3]selenazole (3af). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), white solid. M.p. = 126.1 - 127.9 °C; ^1H NMR (400 MHz, CDCl$_3$) δ 8.06 (dd, J = 8.1, 0.7 Hz, 1H), 8.00-7.93 (m, 2H), 7.91 (dd, J = 7.9, 0.7 Hz, 1H), 7.50 - 7.42 (m, 1H), 7.28 (dd, J = 10.6, 3.8 Hz, 1H), 7.02 - 6.94 (m, 2H), 3.88 (s, 3H). ^13C NMR (101 MHz, CDCl$_3$) δ 171.99, 162.02, 155.96, 138.04, 129.56, 129.12, 126.28, 124.87, 124.72, 124.41, 114.40, 55.46. HRMS m/z [M+H]^+ Calcd for C$_{14}$H$_{12}$NOSe: 290.0052, found: 290.0063.

2-(3,5-dimethoxyphenyl)benzo[d][1,3]selenazole (3ah). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), white solid. M.p. = 98.7 - 99.6 °C; ^1H NMR (400 MHz, CDCl$_3$) δ 8.11 (dd, J = 8.1, 0.6 Hz, 1H), 7.93 (dd, J = 7.9, 0.7 Hz, 1H), 7.53 - 7.42 (m, 1H), 7.35 - 7.27 (m, 1H), 7.18 (d, J = 2.3 Hz, 2H), 6.60 (t, J = 2.3 Hz, 1H), 3.89 (s, 6H). ^13C NMR (101 MHz, CDCl$_3$) δ 172.33, 161.15, 155.68, 138.39, 138.00, 126.37, 125.33, 124.89, 124.80, 105.95, 103.39, 55.62. HRMS m/z [M+H]^+ Calcd for C$_{15}$H$_{14}$NO$_2$Se: 320.0185, found: 320.0174.
2-(4-fluorophenyl)benzo[d][1,3]selenazole (3aj). Purified by flash chromatography (petroleum ether / ethyl acetate = 150 / 1), white solid. M.p. = 101.6 - 103.5 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.09 (dd, J = 8.1, 0.6 Hz, 1H), 8.05 - 7.97 (m, 2H), 7.93 (dd, J = 8.0, 0.6 Hz, 1H), 7.52-7.45 (m, 1H), 7.35-7.28 (m, 1H), 7.20-7.12 (m, 2H). ¹³C NMR (101 MHz, CDCl₃) δ 170.91, 164.48 (d, J = 252.1 Hz), 155.78, 138.39, 132.57 (d, J = 3.3 Hz), 129.90 (d, J = 8.7 Hz), 126.48, 125.31, 124.80, 116.16 (d, J = 22.1 Hz). HRMS m/z [M+H]⁺ Calcd for C₁₃H₉FNSe: 277.9879, found: 277.9863.

2-(4-chlorophenyl)benzo[d][1,3]selenazole (3ai). Purified by flash chromatography (petroleum ether / ethyl acetate = 150 / 1), white solid. M.p. = 110.6 - 112.5 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.10 (dd, J = 8.1, 0.7 Hz, 1H), 7.98 – 7.86 (m, 3H), 7.52 – 7.40 (m, 3H), 7.35 – 7.28 (m, 1H). ¹³C NMR (101 MHz, CDCl₃) δ 169.84, 154.73, 137.41, 136.06, 133.69, 128.27, 128.09, 125.52, 124.45, 123.91, 123.82. HRMS m/z [M+H]⁺ Calcd for C₁₃H₉ClNSe: 293.9581, found: 293.9577.

4-(benzo[d][1,3]selenazol-2-yl)-N,N-dimethylaniline (3ak). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), yellow solid. M.p. = 168.6 - 170.1 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.04 – 7.97 (m, 1H), 7.88 (d, J = 8.8 Hz, 3H), 7.47 – 7.39 (m, 1H), 7.25 – 7.19 (m, 1H), 6.72 (d, J = 8.9 Hz, 2H), 3.05 (s, 6H). ¹³C NMR (101 MHz, CDCl₃) δ 172.83, 156.19, 152.28, 137.49, 129.41, 126.10, 124.61, 124.29, 124.06, 123.81, 111.68, 40.17. HRMS m/z [M+H]⁺ Calcd for C₁₃H₁₃N₂Se: 303.0395, found: 303.0381.

4-(benzo[d][1,3]selenazol-2-yl)benzonitrile (3al). Purified by flash chromatography (petroleum ether / ethyl acetate = 100 / 1), white solid. M.p. = 168.5 - 169.6 °C; ¹H
NMR (400 MHz, CDCl$_3$) $\delta$ 8.12 (ddd, $J = 16.1$, 7.5, 1.2 Hz, 3H), 7.96 (dd, $J = 8.0$, 0.6 Hz, 1H), 7.81 – 7.69 (m, 2H), 7.57 – 7.49 (m, 1H), 7.41 – 7.31 (m, 1H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 169.64, 155.62, 139.84, 138.85, 132.73, 128.28, 126.86, 126.10, 125.46, 124.97, 118.32, 114.07. HRMS m/z [M+H]$^+$ Calcd for C$_{14}$H$_9$N$_2$Se: 284.9926, found: 284.9912.

$N$-(4-(benzo[d][1,3]selenazol-2-yl)phenyl)acetamide (3am). Purified by flash chromatography (dichloromethane / methanol = 150 / 1), yellow solid. M.p. = 219.2-221.3 °C; $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 8.07 (d, $J = 7.5$ Hz, 1H), 8.01 – 7.85 (m, 3H), 7.64 (d, $J = 8.4$ Hz, 2H), 7.51 – 7.44 (m, 1H), 7.41 (s, 1H), 7.34 – 7.27 (m, 1H), 2.21 (s, 3H). $^{13}$C NMR (101 MHz, DMSO) $\delta$ 171.67, 168.78, 155.37, 142.15, 137.57, 130.05, 128.45, 126.50, 125.51, 125.11, 124.00, 119.12, 24.09. HRMS m/z [M+H]$^+$ Calcd for C$_{15}$H$_{13}$N$_2$OSe: 317.0188, found: 317.0162.

2-(pyridin-4-yl)benzo[d][1,3]selenazole (3an). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), yellow solid. M.p. = 125.4 - 126.8 °C; $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 8.76 (dd, $J = 4.5$, 1.6 Hz, 2H), 8.17 (dd, $J = 8.2$, 0.6 Hz, 1H), 7.98 (dd, $J = 8.0$, 0.6 Hz, 1H), 7.86 (dd, $J = 4.5$, 1.6 Hz, 2H), 7.54 (ddd, $J = 8.3$, 7.3, 1.2 Hz, 1H), 7.41 – 7.35 (m, 1H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 169.54, 155.58, 150.79, 142.89, 138.70, 126.82, 126.19, 125.58, 125.01, 121.57. HRMS m/z [M+H]$^+$ Calcd for C$_{12}$H$_9$N$_2$Se: 260.9926, found: 260.9911.

2-(pyridin-2-yl)benzo[d][1,3]selenazole (3ao). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), white solid. M.p. = 165.0-166.2 °C; $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 8.66 (ddd, $J = 4.8$, 1.6, 0.9 Hz, 1H), 8.32 (dt, $J = 7.9$, 1.0 Hz, 1H),
8.12 (dd, J = 8.1, 0.6 Hz, 1H), 7.99 (dd, J = 7.9, 0.7 Hz, 1H), 7.83 (td, J = 7.7, 1.7 Hz, 1H), 7.49 (ddd, J = 8.3, 7.3, 1.2 Hz, 1H), 7.42 – 7.30 (m, 2H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 175.01, 156.31, 153.18, 149.81, 139.16, 136.97, 126.26, 125.58, 125.33, 125.22, 119.84. HRMS m/z [M+H]$^+$ Calcd for C$_{12}$H$_8$N$_2$Se: 260.9926, found: 260.9902.

2-(naphthalen-2-yl)benzo[d][1,3]selenazole (3ap). Purified by flash chromatography (petroleum ether / ethyl acetate = 150 / 1), white solid. M.p. = 163.4 - 164.9 °C; $^1$H NMR (400 MHz, CDCl$_3$) δ 8.47 (d, J = 0.7 Hz, 1H), 8.22 – 8.05 (m, 2H), 8.03 – 7.91 (m, 3H), 7.90 – 7.85 (m, 1H), 7.60 – 7.46 (m, 3H), 7.37 – 7.29 (m, 1H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 171.41, 154.90, 137.35, 133.64, 132.54, 132.21, 127.78, 127.77, 127.19, 126.84, 126.43, 125.86, 125.41, 124.27, 123.82, 123.80, 123.73. HRMS m/z [M+H]$^+$ Calcd for C$_{17}$H$_{12}$N$_2$Se: 310.0135, found: 310.0115

2-(thiophen-2-yl)benzo[d][1,3]selenazole (3aq). Purified by flash chromatography (petroleum ether / ethyl acetate = 150 / 1), yellow solid. M.p. = 115.1-117.0 °C; $^1$H NMR (400 MHz, CDCl$_3$) δ 8.06 (dd, J = 8.1, 0.6 Hz, 1H), 7.88 (dd, J = 8.0, 0.6 Hz, 1H), 7.59 (dd, J = 3.7, 1.1 Hz, 1H), 7.54 – 7.41 (m, 2H), 7.29 (ddd, J = 8.0, 7.3, 1.2 Hz, 1H), 7.12 (dd, J = 5.0, 3.8 Hz, 1H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 164.24, 155.30, 140.17, 138.00, 129.60, 129.51, 127.98, 126.51, 125.31, 124.71, 124.56. HRMS m/z [M+H]$^+$ Calcd for C$_{11}$H$_8$NSe: 265.9537, found: 265.9535.

2-(1-methyl-1H-indol-2-yl)benzo[d][1,3]selenazole (3ar). Purified by flash chromatography (petroleum ether / ethyl acetate = 30 / 1), yellow solid. M.p. = 163.2-165.2 °C; $^1$H NMR (400 MHz, CDCl$_3$) δ 8.09 (dd, J = 8.1, 0.6 Hz, 1H), 7.92 (dd, J = 7.9, 0.7 Hz, 1H), 7.68 (d, J = 8.0 Hz, 1H), 7.53 – 7.46 (m, 1H), 7.43 (dd, J =
8.4, 0.6 Hz, 1H), 7.38 – 7.29 (m, 2H), 7.21 – 7.15 (m, 1H), 7.14 (s, 1H), 4.30 (s, 3H).

$^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 163.67, 155.97, 139.84, 137.86, 134.54, 127.32, 126.35, 125.33, 124.71, 124.56, 124.20, 121.46, 120.56, 110.16, 108.72, 32.29. HRMS m/z [M+H]$^+$ Calcd for C$_{16}$H$_{13}$N$_2$Se: 313.0239, found: 313.0223.

2-(3,4-dimethoxyphenyl)-5-fluorobenzo[d][1,3]selenazole (3eg). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), white solid. M.p. = 119.8 - 120.9 °C; $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 7.80 (dd, J = 8.7, 5.4 Hz, 1H), 7.74 (dd, J = 9.8, 2.5 Hz, 1H), 7.63 (d, J = 2.0 Hz, 1H), 7.47 (dd, J = 8.3, 2.0 Hz, 1H), 7.05 (td, J = 8.7, 2.6 Hz, 1H), 6.92 (d, J = 8.4 Hz, 1H), 4.01 (s, 3H), 3.95 (s, 3H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 174.66, 162.14 (d, J = 242.7 Hz), 156.82 (d, J = 11.7 Hz), 151.94, 149.40, 132.85 (d, J = 2.3 Hz), 129.07, 125.19 (d, J = 9.5 Hz), 122.17, 113.25 (d, J = 24.3 Hz), 111.08, 110.68 (d, J = 23.3 Hz), 109.71, 56.14, 56.07. HRMS m/z [M+H]$^+$ Calcd for C$_{15}$H$_{13}$FNO$_2$Se: 338.0091, found: 338.0068.

2-(3,4-dimethoxyphenyl)-6-methoxybenzo[d][1,3]selenazole (3fh). Purified by flash chromatography (petroleum ether / ethyl acetate = 50 / 1), white solid. M.p. = 119.6-120.9 °C; $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 7.97 (d, J = 8.9 Hz, 1H), 7.38 (d, J = 2.6 Hz, 1H), 7.12 (d, J = 2.3 Hz, 2H), 7.05 (dd, J = 8.9, 2.6 Hz, 1H), 6.56 (t, J = 2.3 Hz, 1H), 3.86 (s, 6H), 3.85 (s, 3H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 169.35, 161.13, 157.70, 150.13, 139.69, 138.08, 125.16, 115.03, 107.87, 105.67, 102.99, 55.75, 55.60. HRMS m/z [M+H]$^+$ Calcd for C$_{16}$H$_{16}$NO$_3$Se: 350.0291, found: 350.0271.

$N$-benzylidene-2-iodoaniline (4). $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 8.31 (s, 1H), 7.92 – 7.86 (m, 3H), 7.56 – 7.47 (m, 3H), 7.39 – 7.36 (m, 1H), 7.01 (dd, J = 7.8, 1.5 Hz, 1H),
6.93 (d, J = 1.3 Hz, 1H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 161.01, 146.86, 139.01, 134.50, 129.78, 129.38, 129.36, 129.16, 128.89, 119.98, 118.44. HRMS m/z [M+H]$^+$
Calcd for C$_{13}$H$_{10}$IN: 307.9931, found: 307.9920.

$\text{2,2'$-diselanediylbisaniline} \ (5)$. To a solution of 2-iodoaniline (10 mmol) in dry DMSO (20 mL), selenium powder (30 mmol), copper powder (1 mmol) and KOH (20 mmol) were added, the reaction mixture was stirred in a sealed tube under argon atmosphere at 120 °C for 5 h. After the reaction was finished, the mixture was cooled to room temperature, diluted with saturated aq NH$_4$Cl (150 mL) and extracted with ethyl acetate (3 × 100 mL). The organic layer was dried over Na$_2$SO$_4$ and the solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (petroleum ether / ethyl acetate = 10 / 1) to afford product 5. Orange solid, yield = 82%. M.p. = 78.7-79.6 °C; $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 7.38 (dd, J = 7.7, 1.5 Hz, 2H), 7.16 (td, J = 8.0, 1.5 Hz, 2H), 6.74 (dd, J = 8.0, 1.2 Hz, 2H), 6.58 (td, J = 7.6, 1.3 Hz, 2H), 4.28 (s, 4H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 148.86, 138.32, 131.53, 118.43, 115.03, 114.78. HRMS m/z [M+H]$^+$ Calcd for C$_{12}$H$_{13}$N$_2$Se$_2$: 344.9406, found: 344.9394.

$\text{2,2'$-diselanediylbis(N-benzylideneaniline)} \ (6)$. $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 8.54 (s, 2H), 8.04 – 7.96 (m, 4H), 7.69 (dd, J = 8.1, 1.3 Hz, 2H), 7.55 – 7.47 (m, 6H), 7.26 – 7.20 (m, 2H), 7.13- 7.09 (m, 4H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 158.32, 148.17, 134.96, 130.76, 128.31, 128.15, 128.83, 127.05, 126.54, 126.36, 115.49. HRMS m/z [M+H]$^+$ Calcd for C$_{26}$H$_{20}$N$_2$Se$_2$: 521.0034, found: 521.0016.
2. The spectra of GC-MS

2.1. The reaction mixture was stirred at 120°C for 10 h, and the mixture was analyzed by GC-MS.
2.2. The reaction mixture was stirred at 120°C for 12 h, and the mixture was analyzed by GC-MS (the data was collected from the beginning of the 4 min).
3. $^1$H and $^{13}$C NMR spectra