

SUPPORTING INFORMATION

Dual-functional urea-linked conjugated porous polymer
anchoring silver nanoparticles for highly efficient CO₂
conversion under mild conditions

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1. Segmental Results

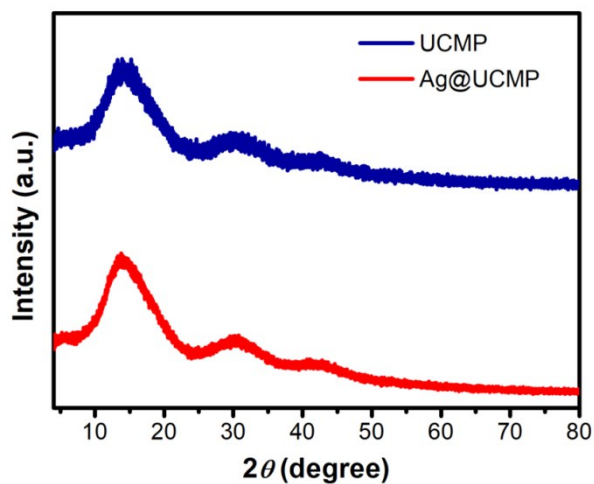


Figure S1. XRD patterns of UCMP and Ag@UCMP.

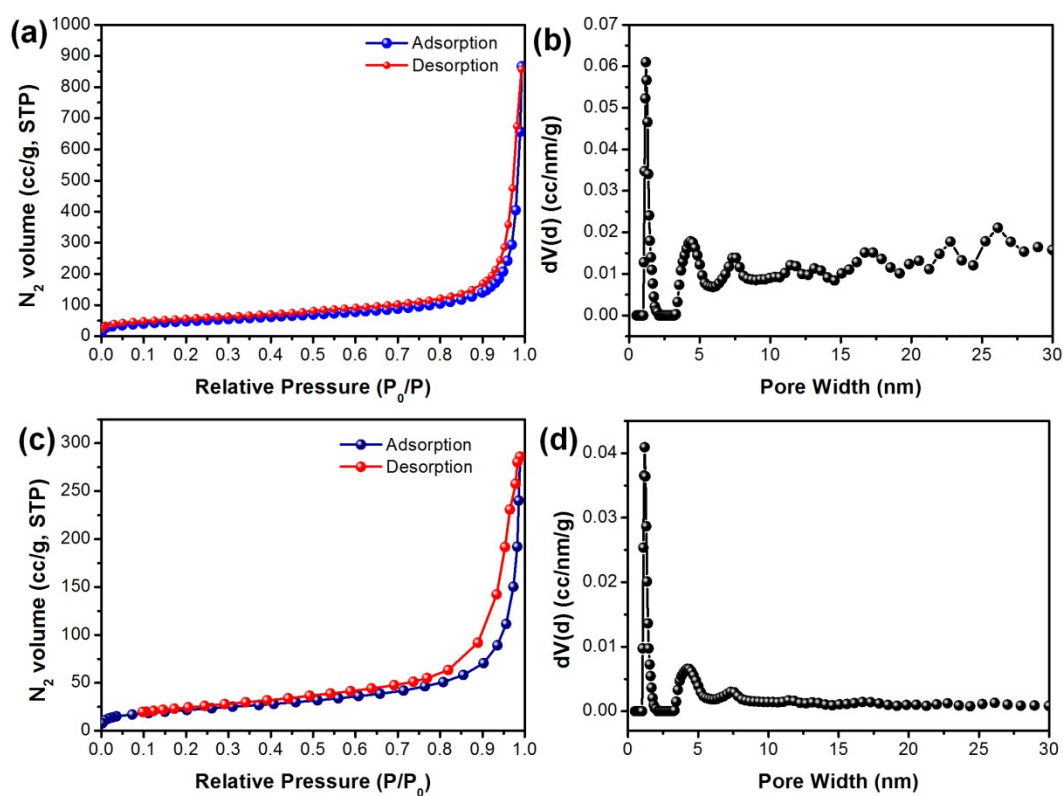


Figure S2. N₂ adsorption-desorption isotherm and pore width by nonlocal density functional theory method of (a) and (b) UCMP and (c) and (d) Ag@UCMP.

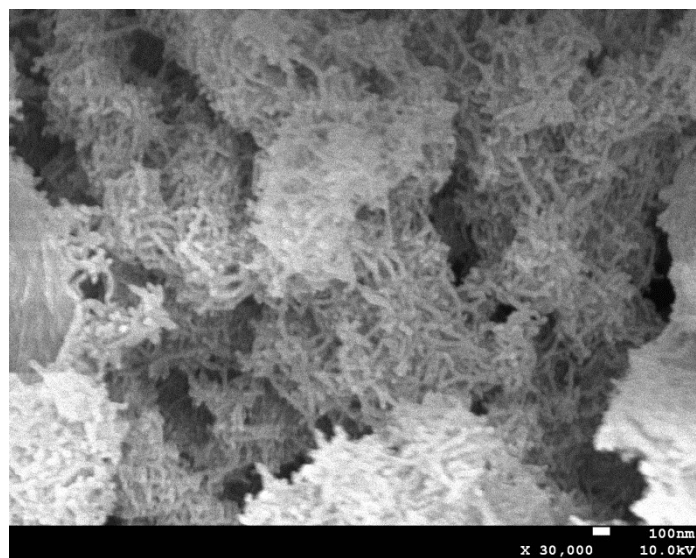


Figure S3. SEM image of UCPP.

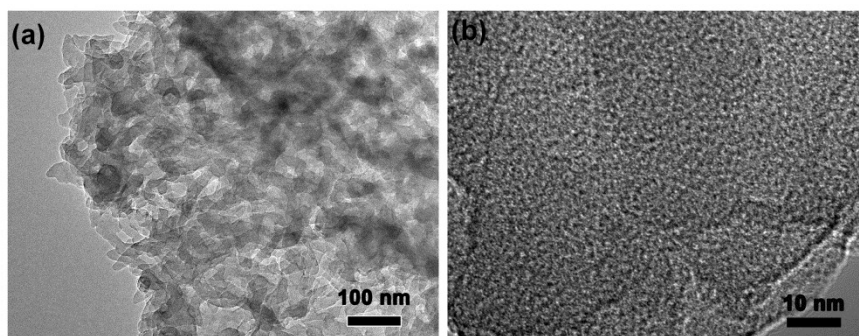


Figure S4. TEM images of UCPP.

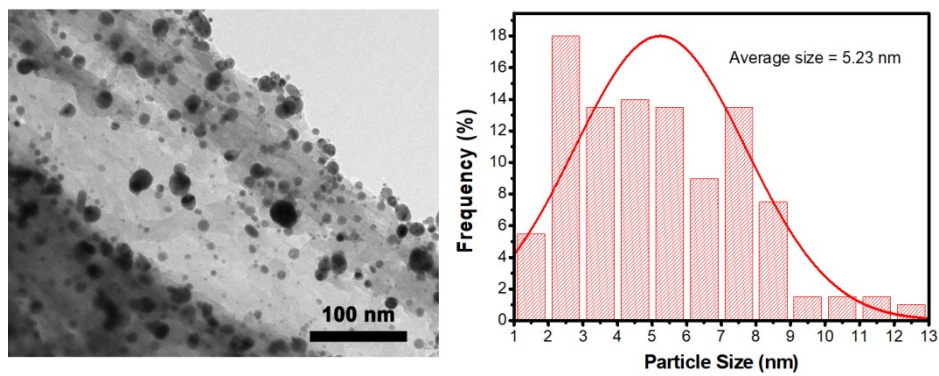


Figure S5. TEM image of (a) Ag@UCPP and (b) particles size distribution.

2. Characterization Data of All Products

4,4-Dimethyl-5-methylene-1,3-dioxolan-2-one (2a):

¹H NMR (600 MHz, CDCl₃) δ (ppm): 4.71 (d, *J* = 4.20 Hz, 1H), 4.24 (d, *J* = 4.20 Hz, 1H), 1.55 (s, 6H). ¹³C NMR (150 MHz, CDCl₃) δ (ppm): 158.78, 151.26, 85.26, 84.61, 27.58. GC-MS (EI): exact mass = 128.05, found mass = 128.03.

4-Ethyl-4-methyl-5-methylene-1,3-dioxolan-2-one (2b)

¹H NMR (600 MHz, CDCl₃) δ (ppm): 4.81 (d, *J* = 3.60 Hz, 1H), 4.26 (d, *J* = 3.60 Hz, 1H), 1.94-1.88 (m, 1H), 1.79-1.74 (m, 1H), 1.59 (s, 3H). 0.99 (t, *J* = 7.2 Hz, 3H). ¹³C NMR (151 MHz, CDCl₃) δ (ppm): 157.50, 151.53, 87.54, 85.53, 33.42, 25.97, 7.35. GC-MS (EI): exact mass = 142.06, found mass = 142.07.

4,4-Diethyl-5-methylene-1,3-dioxolan-2-one (2c)

¹H NMR (600 MHz, CDCl₃) δ (ppm): 4.87 (d, *J* = 4.2 Hz, 1H), 4.23 (d, *J* = 4.2 Hz, 1H), 1.97-1.91 (m, 2H), 1.74-1.69 (m, 2H), 0.98 (t, *J* = 7.2 Hz, 6H). ¹³C NMR (150 MHz, CDCl₃) δ (ppm): 155.81, 151.85, 90.83, 85.78, 31.90, 7.10. GC-MS (EI): exact mass=156.08, found mass =156.14.

4-Isopropyl-4-methyl-5-methylene-1,3-dioxolan-2-one (2d)

¹H NMR (600 MHz, CDCl₃) δ (ppm): 4.82 (d, *J* = 4.2 Hz, 1H), 4.27 (d, *J* = 4.2 Hz, 1H), 1.97-1.92 (m, 1H), 1.58 (s, 3H), 1.02 (dd, *J*₁ = 16.2 Hz, *J*₂ = 7.2 Hz, 6H). ¹³C NMR (150 MHz, CDCl₃) δ (ppm): 157.15, 151.68, 89.80, 86.17, 36.97, 24.01, 16.32, 16.02. GC-MS (EI): exact mass= 156.08, found mass = 156.09.

4-methyl-5-methylene-4-nonyl-1,3-dioxolan-2-one (2e)

^1H NMR (600 MHz, CDCl_3) δ (ppm): 4.79 (d, $J = 7.2$ Hz, 1H), 4.26 (d, $J = 3.6$ Hz, 1H), 1.88-1.83 (m, 1H), 1.71-1.67 (m, 1H), 1.58 (s, 3H), 1.30-1.26 (m, 14H), 0.88 (t, $J = 4.8$ Hz, 3H). ^{13}C NMR (150 MHz, CDCl_3) δ 157.83, 151.50, 87.24, 85.40, 40.43, 31.82, 29.40, 29.30, 29.26, 29.21, 26.30, 22.94, 22.63, 14.06. GC-MS (EI): exact mass = 240.17, found mass = 240.10.

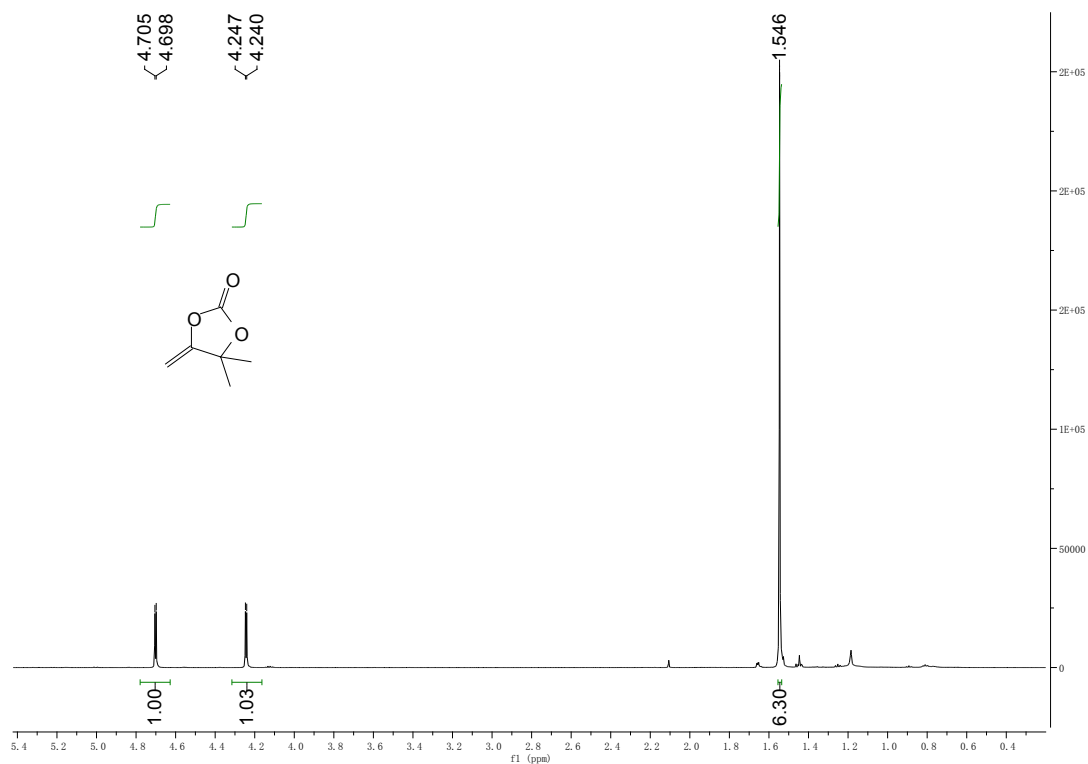
4-Methylene-1,3-dioxaspiro[4.4]nonan-2-one (2f)

^1H NMR (600 MHz, CDCl_3) δ (ppm): 4.79 (d, $J = 4.20$ Hz, 1H), 4.34 (d, $J = 4.20$ Hz, 1H), 2.26-2.20 (m, 2H), 1.94-1.84 (m, 6H). ^{13}C NMR (150 MHz, CDCl_3) δ (ppm) : 157.82, 151.47, 94.20, 85.30, 40.66, 24.26. GC-MS (EI): exact mass = 154.06, found mass = 154.08

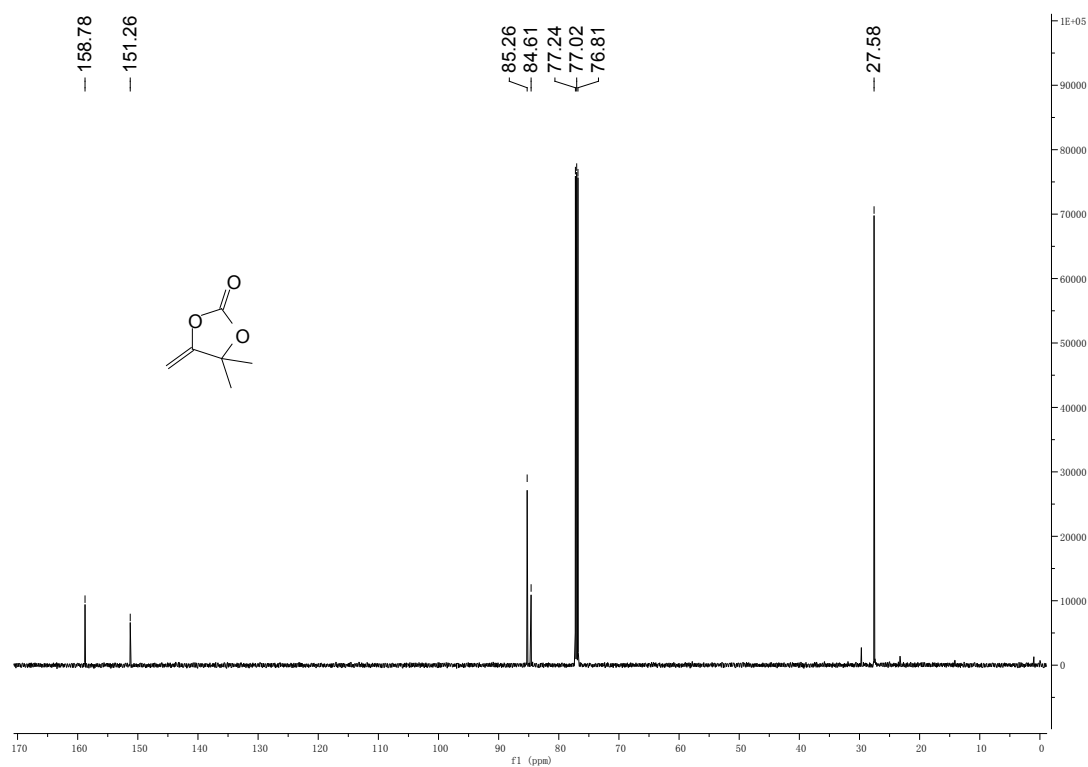
4-Methylene-1,3-dioxaspiro[4.5]decan-2-one (2g)

^1H NMR (600 MHz, CDCl_3) δ (ppm): 4.76 (d, $J = 3.6$ Hz, 1H), 4.29 (d, $J = 3.6$ Hz, 1H), 2.01 (d, $J = 12.6$ Hz, 2H), 1.77-1.59 (m, 7H), 1.35-1.26 (m, 1H). ^{13}C NMR (150 MHz, CDCl_3) δ (ppm): 158.76, 151.51, 86.40, 85.50, 77.25, 77.04, 76.83, 36.52, 24.36, 21.62. GC-MS (EI): exact mass = 168.08, found mass = 168.08.

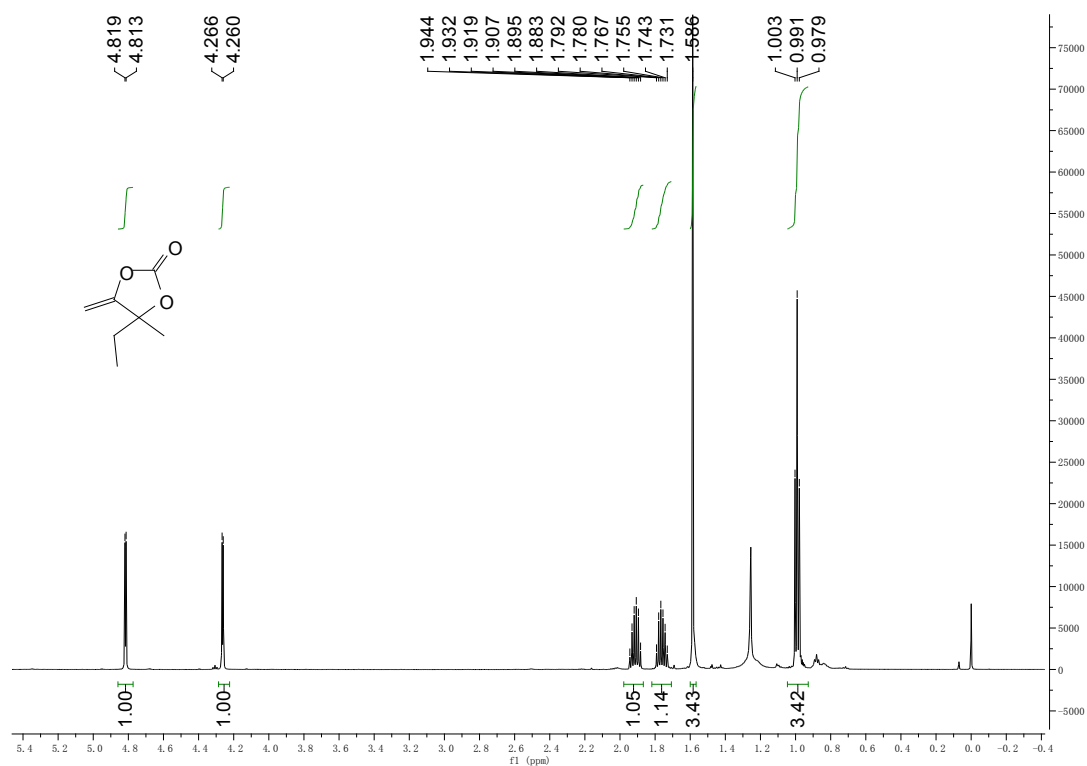
3. Spectra Copies of All the Products



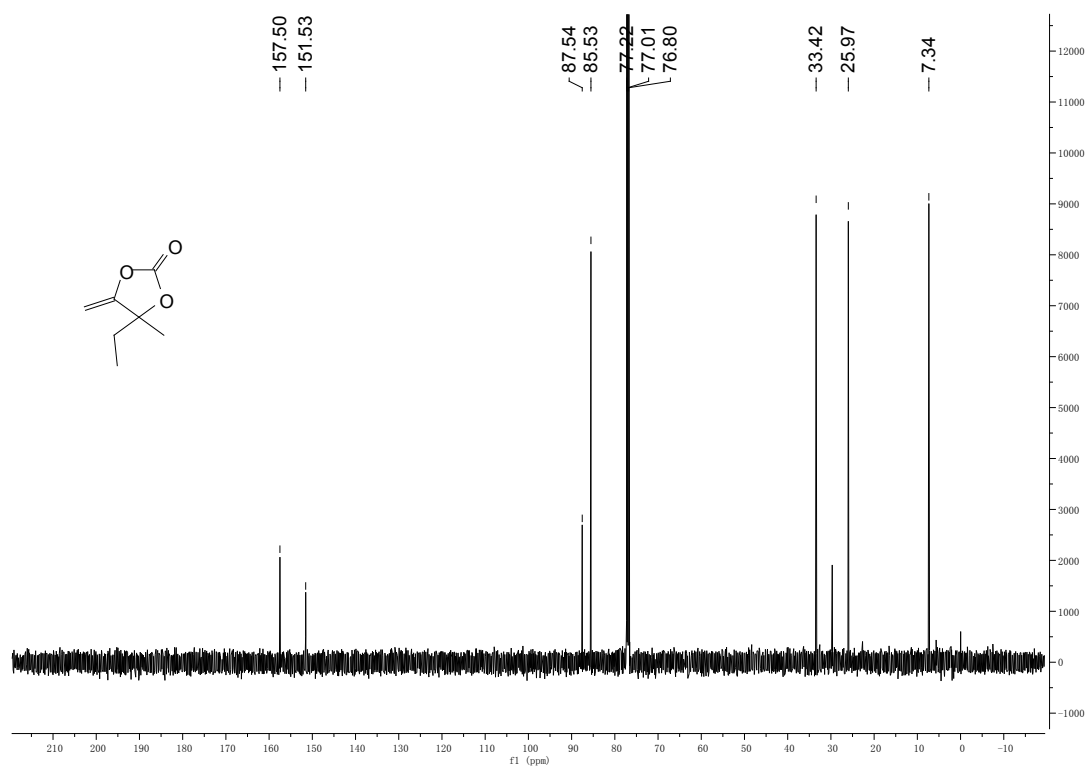
^1H NMR of **2a** (600M, CDCl_3)



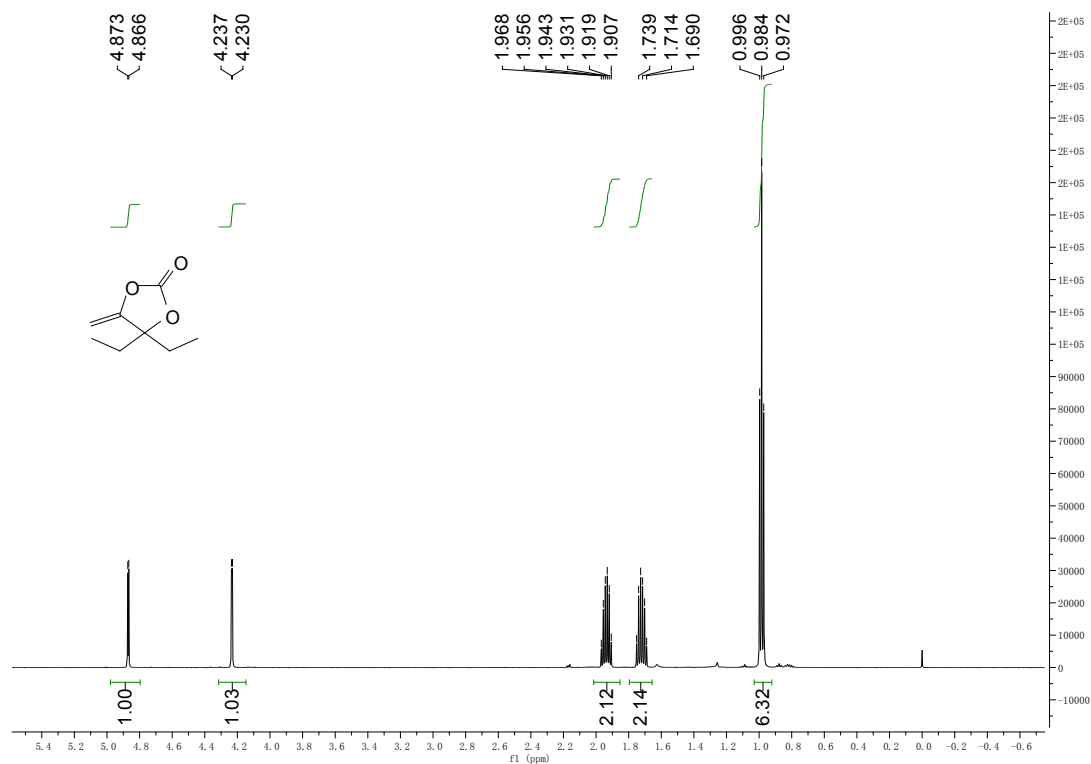
^{13}C NMR of **2a** (150M, CDCl_3)



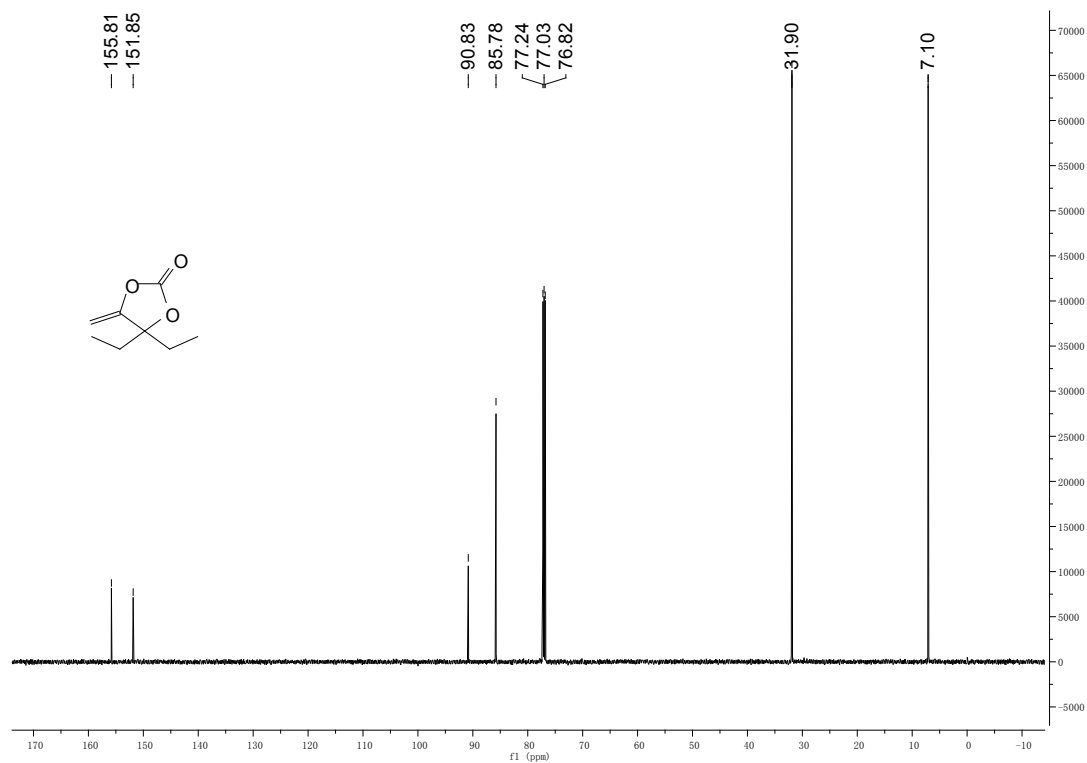
¹H NMR of **2b** (600M, CDCl₃)



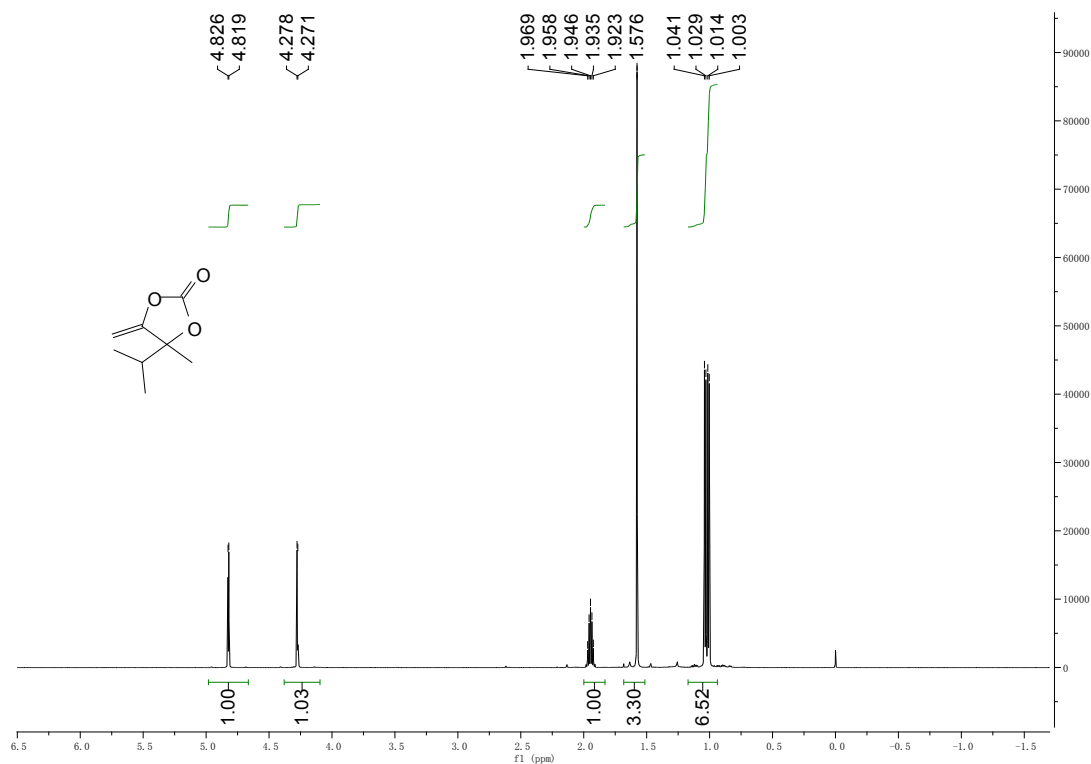
¹³C NMR of **2b** (150M, CDCl₃)



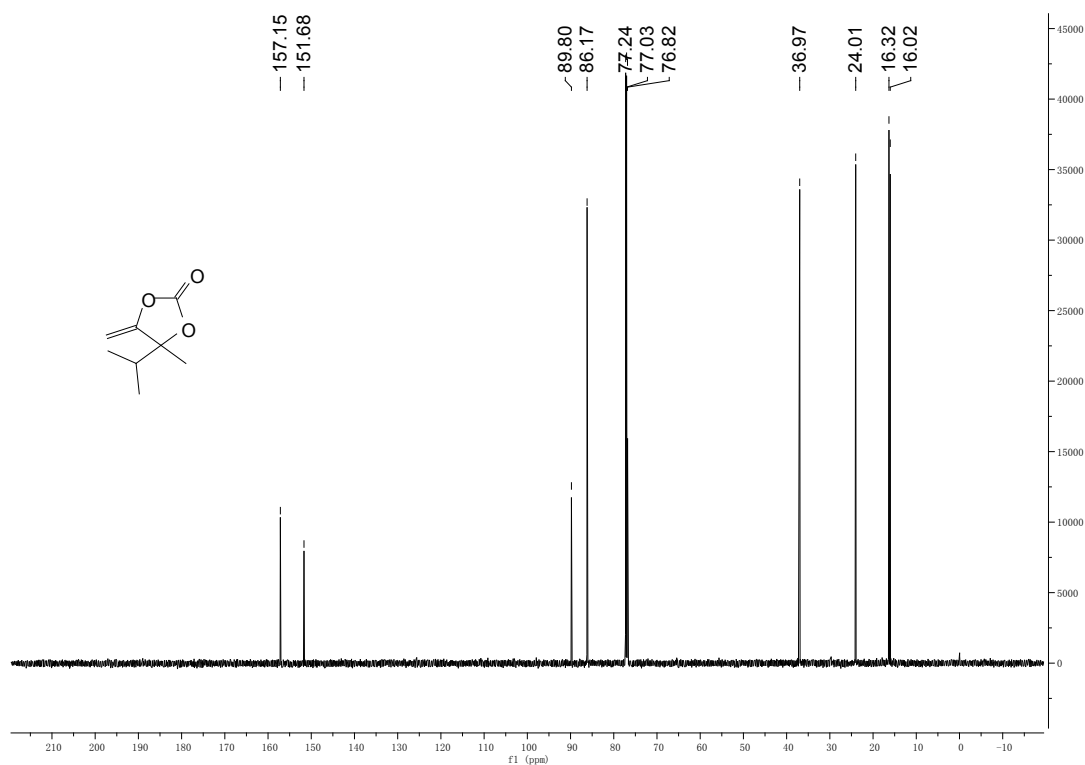
¹H NMR of **2c** (600M, CDCl₃)



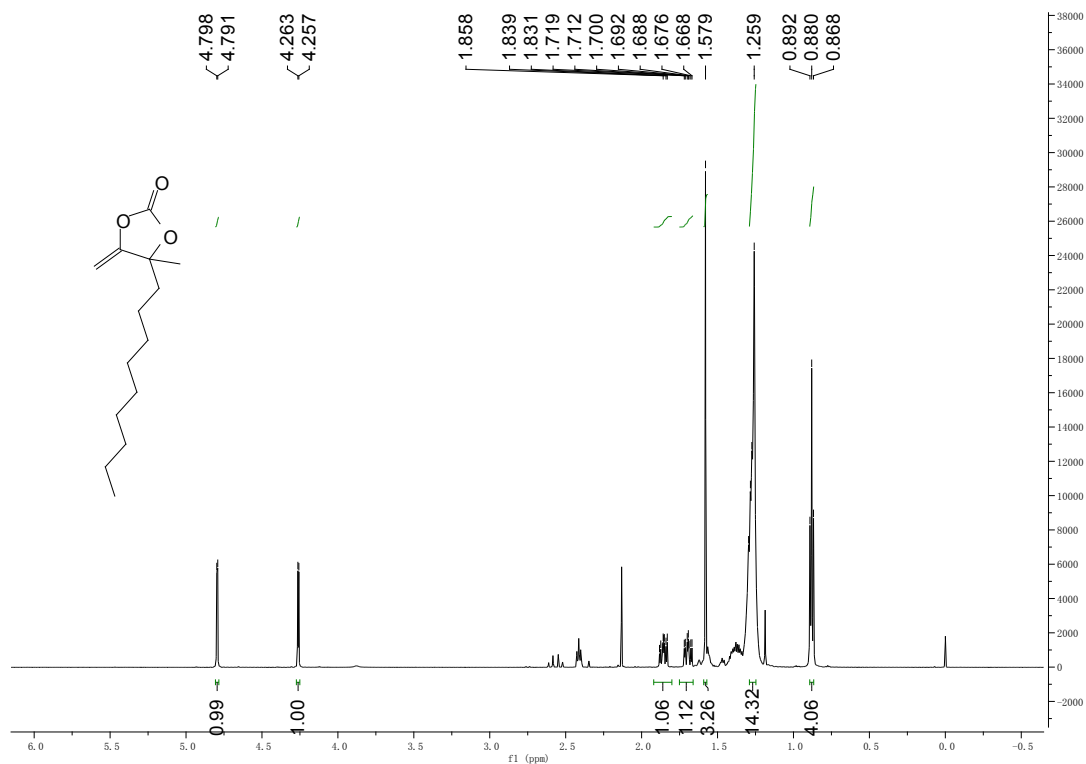
¹³C NMR of **2c** (150M, CDCl₃)



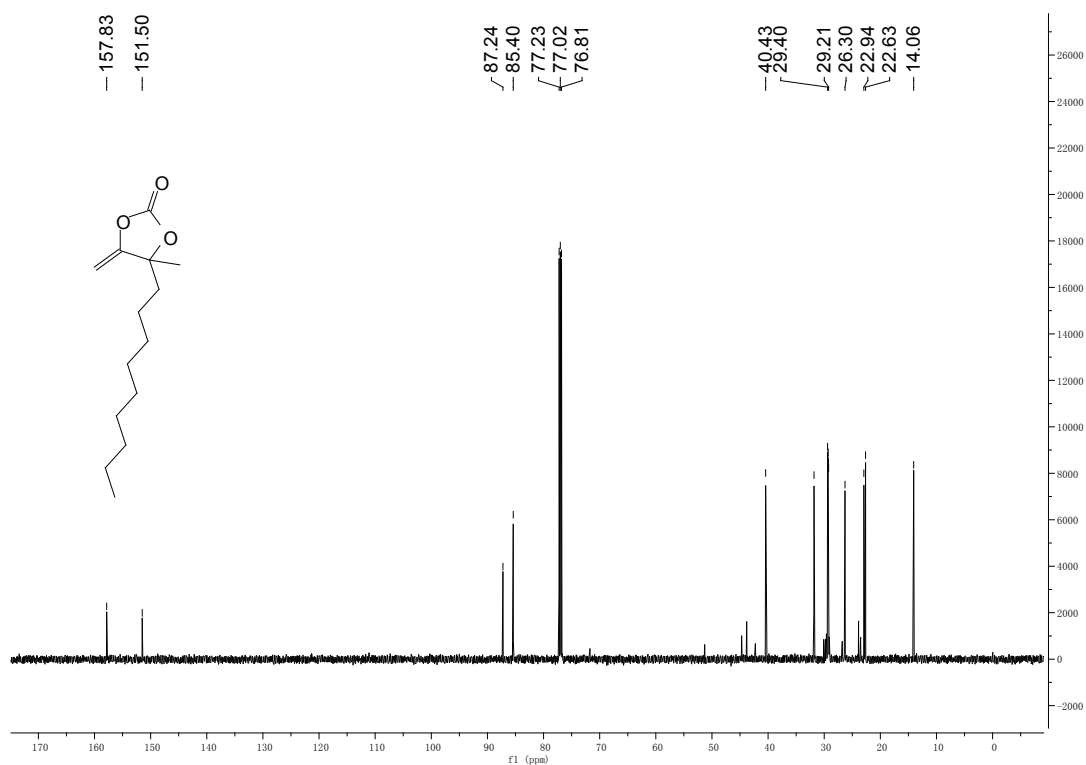
¹H NMR of **2d** (600M, CDCl₃)



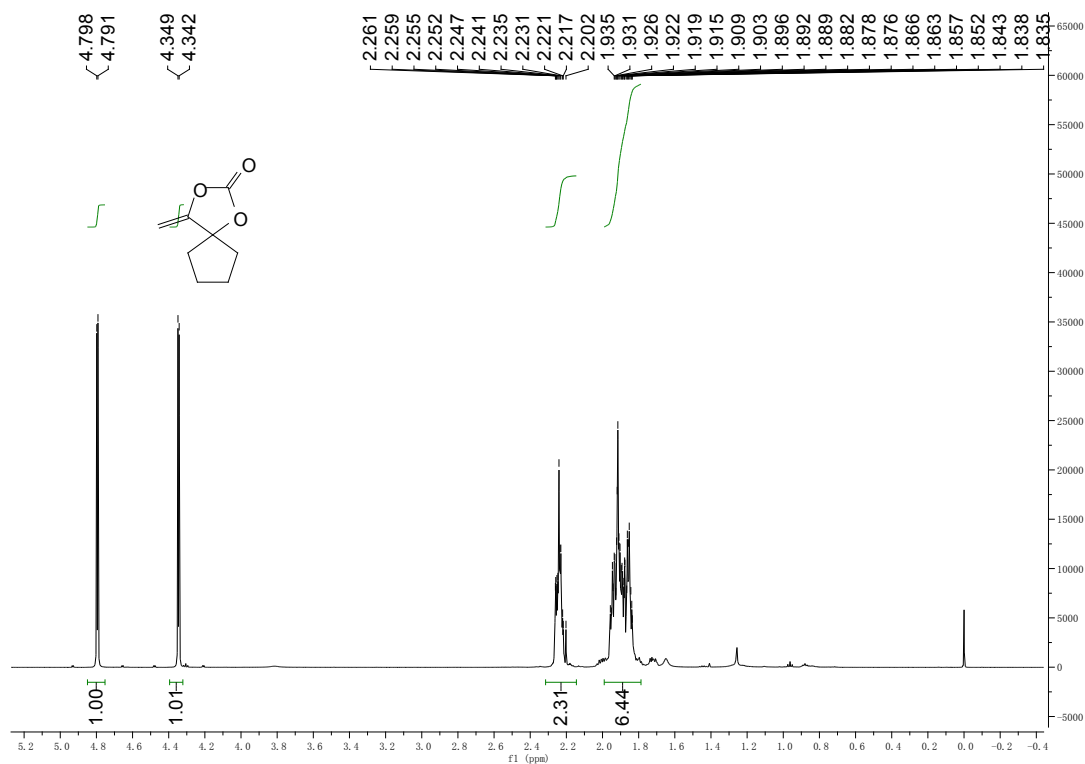
¹³C NMR of **2d** (150M, CDCl₃)



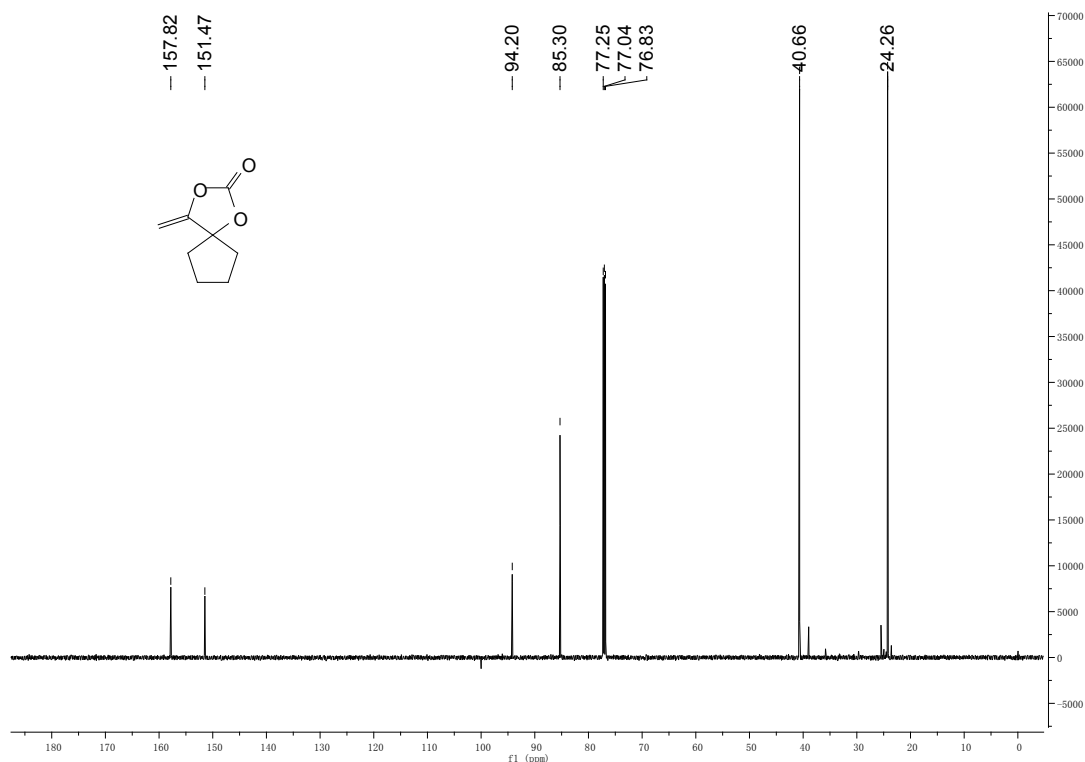
¹H NMR of **2e** (600M, CDCl₃)



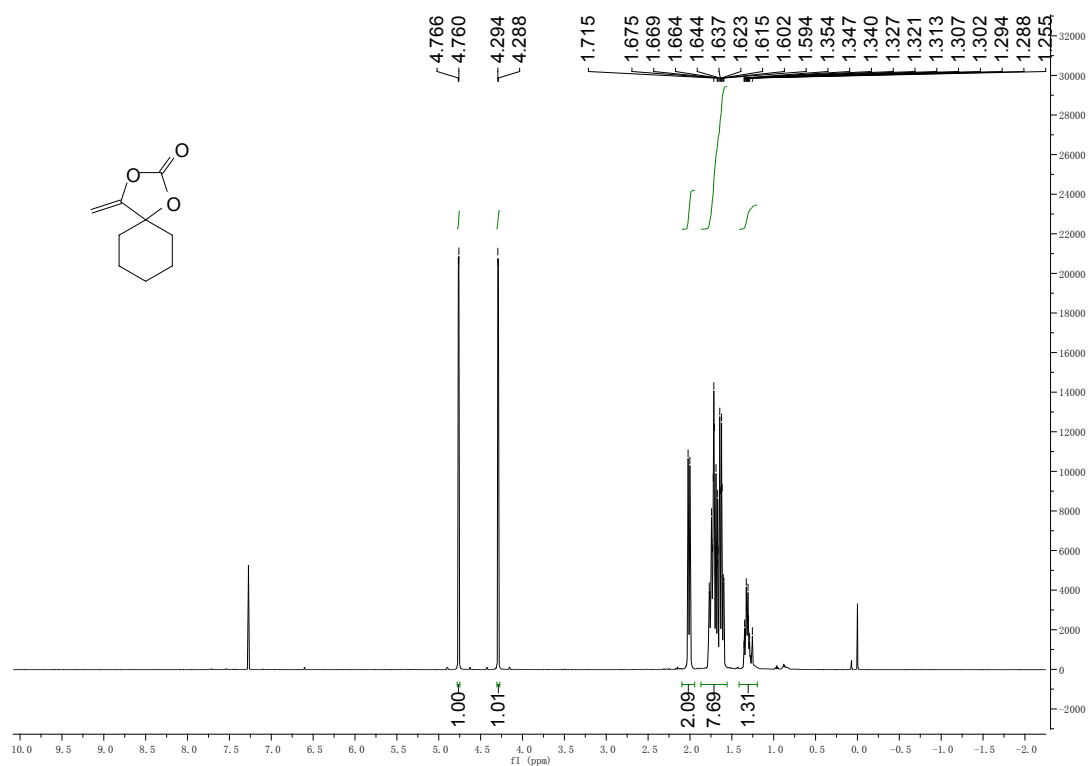
¹³C NMR of **2e** (150M, CDCl₃)



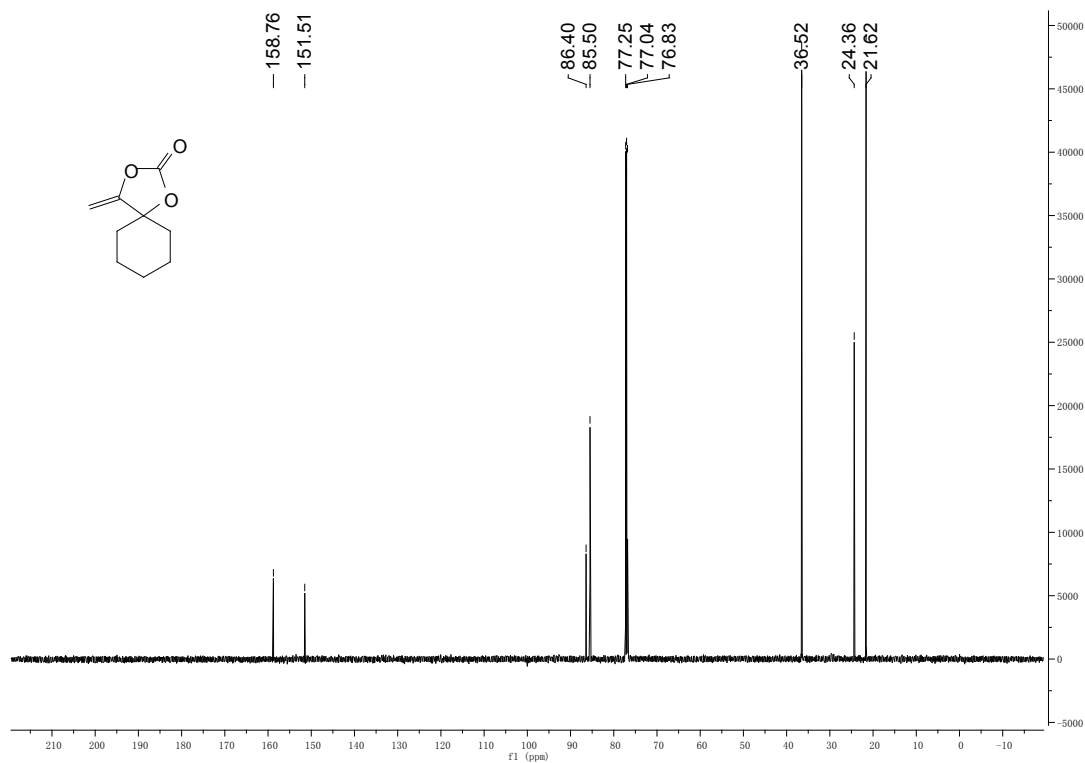
¹H NMR of **2f** (600M, CDCl₃)



¹³C NMR of **2f** (150M, CDCl₃)



¹H NMR of **2g** (600M, CDCl₃)



¹³C NMR of **2g** (150M, CDCl₃)

