Supporting Information

Copper(I) Catalyzed Nucleophilic Addition of Ynamides to Acyl Chlorides and Activated N-Heterocycles

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Contents:

1. NMR Spectra of Compounds 2-19 S2
2. Crystallographic Analysis of N-(3-Phenyl-3-oxoprop-1-ynyl)-N-phenyl-4-tolylsulfonamide S20
1. NMR Spectra of Compounds 2-19

$^1$H NMR Spectrum of $N$-(3-Phenyl-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 2.

$^{13}$C NMR Spectrum of $N$-(3-Phenyl-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 2.
$^1$H NMR Spectrum of $N$-(3-(2-Chlorophenyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 3.

$^{13}$C NMR Spectrum of $N$-(3-(2-Chlorophenyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 3.
$^1$H NMR Spectrum of $N$-(3-(4-Chlorophenyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolyloxycarbonylamide, 4.

$^{13}$C NMR Spectrum of $N$-(3-(4-Chlorophenyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolyloxycarbonylamide, 4.
$^1$H NMR Spectrum of $N$-(3-(4-Cyanophenyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 5.

$^{13}$C NMR Spectrum of $N$-(3-(4-Cyanophenyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 5.
$^1$H NMR Spectrum of $N$-(3-(2-Naphthyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 6.

$^{13}$C NMR Spectrum of $N$-(3-(2-Naphthyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 6.
$^1$H NMR Spectrum of $N$-(3-(1-Naphthyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 7.

[Image of $^1$H NMR spectrum]

$^{13}$C NMR Spectrum of $N$-(3-(1-Naphthyl)-3-oxoprop-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 7.

[Image of $^{13}$C NMR spectrum]
$^1$H NMR Spectrum of $N$-(4,4-Dimethyl-3-oxopent-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 8.

$^{13}$C NMR Spectrum of $N$-(4,4-Dimethyl-3-oxopent-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 8.
$^1$H NMR Spectrum of $N$-(4-Methyl-3-oxopent-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 9.

$^{13}$C NMR Spectrum of $N$-(4-Methyl-3-oxopent-1-ynyl)-$N$-phenyl-4-tolylsulfonamide, 9.
$^1$H NMR Spectrum of N-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)pyridine, 10.

$^{13}$C NMR Spectrum of N-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)pyridine, 10.
$^1$H NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)-4-chloropyridine, 11.

$^13$C NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)-4-chloropyridine, 11.
\(^1\)H NMR Spectrum of \(N\)-Ethoxycarbonyl-1,2-dihydro-2-(N-phenyl-N-tosylaminoethynyl)-5-chloropyridine, 12.

\[^{13}\]C NMR Spectrum of \(N\)-Ethoxycarbonyl-1,2-dihydro-2-(N-phenyl-N-tosylaminoethynyl)-5-chloropyridine, 12.
$^1$H NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-(N-phenyl-N-tosylaminoethynyl)-4-bromopyridine, 13.

\[ \text{Structure Image} \]

$^{13}$C NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-(N-phenyl-N-tosylaminoethynyl)-4-bromopyridine, 13.

\[ \text{Spectrum Image} \]
$^1$H NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)-4-phenylpyridine, 14.

$^{13}$C NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)-4-phenylpyridine, 14.
$^1$H NMR Spectrum of N-Ethoxycarbonyl-2-($N$-phenyl-$N$-tosylaminoethynyl)-2,3-dihydro-4-pyridone, 15.

$^{13}$C NMR Spectrum of N-Ethoxycarbonyl-2-($N$-phenyl-$N$-tosylaminoethynyl)-2,3-dihydro-4-pyridone, 15.
$^1$H NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)quinolone, 16.

$^{13}$C NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-($N$-phenyl-$N$-tosylaminoethynyl)quinolone, 16.
$^1$H NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-$N$-(phenyl-$N$-tosylaminoethynyl)-4,7-dichloroquinoline, 17.

$^{13}$C NMR Spectrum of $N$-Ethoxycarbonyl-1,2-dihydro-2-$N$-(phenyl-$N$-tosylaminoethynyl)-4,7-dichloroquinoline, 17.
\(^1\)H NMR Spectrum of \(N\)-Ethoxycarbonyl-1,2-dihydro-2-\((N\text{-phenyl}-N\text{-tosylaminoethynyl})\)-4-chloro-6-methoxyquinoline, \(18\).

\(13\)C NMR Spectrum of \(N\)-Ethoxycarbonyl-1,2-dihydro-2-\((N\text{-phenyl}-N\text{-tosylaminoethynyl})\)-4-chloro-6-methoxyquinoline, \(18\).
\(^1\)H NMR Spectrum of N-Ethoxycarbonyl-5,6-dihydro-6-(N-phenyl-N-tosylaminoethynyl)phenanthridine, 19.

\[^{13}\text{C}\] NMR Spectrum of N-Ethoxycarbonyl-5,6-dihydro-6-(N-phenyl-N-tosylaminoethynyl)phenanthridine, 19.
2. Crystallographic Analysis of \(N-(3\text{-Phenyl-3-oxoprop-1-ynyl})-N\text{-phenyl-4-tolylsulfonamide, 2.}\)

A single crystal was obtained by slow evaporation of a solution of the ketone in CDCl\(_3\). Single crystal X-ray analysis was performed at 100 K using a Siemens platform diffractometer with graphite monochromated Mo-K\(_\alpha\) radiation (\(\lambda = 0.71073\) Å). Data were integrated and corrected using the Apex 2 program. The structure was solved by direct methods and refined with full-matrix least-square analysis using SHELX-97-2 software. Non-hydrogen atoms were refined with anisotropic displacement parameter. Crystal data: \(C_{22}H_{17}NO_3S, M = 375.44,\) colorless rod, 0.58 x 0.46 x 0.41 mm\(^3\), monoclinic, space group \(P2_1\), \(a = 5.587(2), b = 18.446(7), c = 17.936(7)\) Å, \(\alpha = 90.00, \beta = 97.283(8), \gamma = 90.00, V = 1857 \text{ Å}^3, Z = 4.\)