SUPPORTING INFORMATION

A layered double hydroxide, a synthetically useful heterogeneous catalyst for azide–alkyne cycloadditions in a continuous-flow reactor

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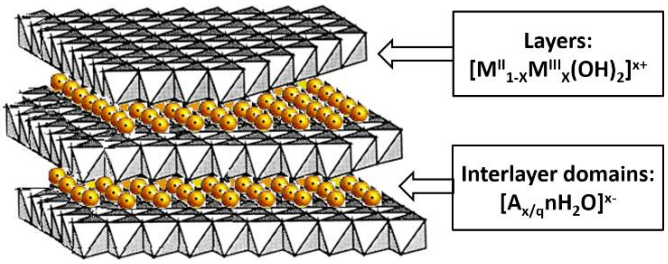


Fig. 1S Schematic structure of LDHs.

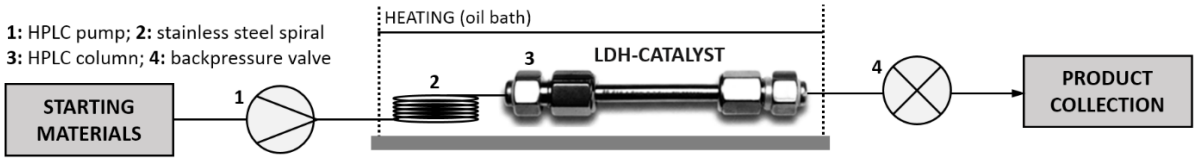


Fig. 2S Experimental setup for the CF reactions.

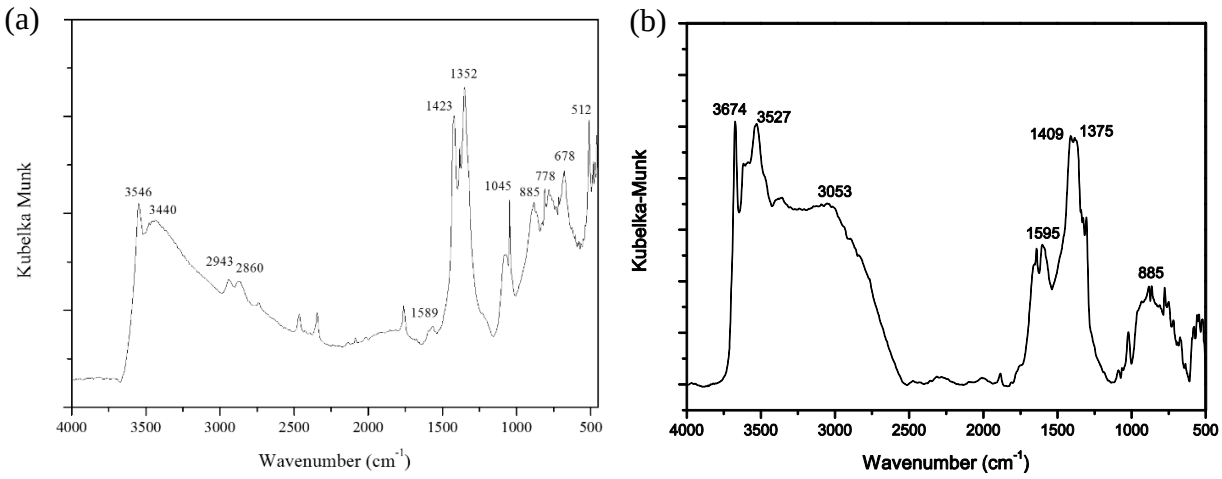


Fig. 3S FT-IR spectra of the Cu(II)Fe(III)-LDH: as-prepared material (a), after the 10-hour long synthesis (b).

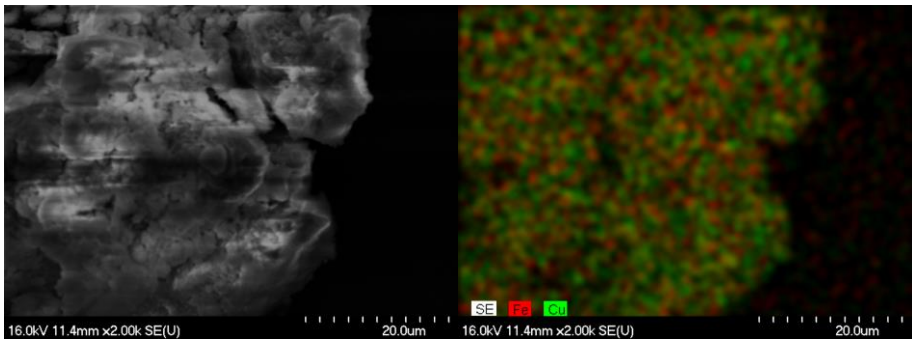


Fig. 4S. Elemental map of the as-prepared Cu(II)Fe(III)-LDH.

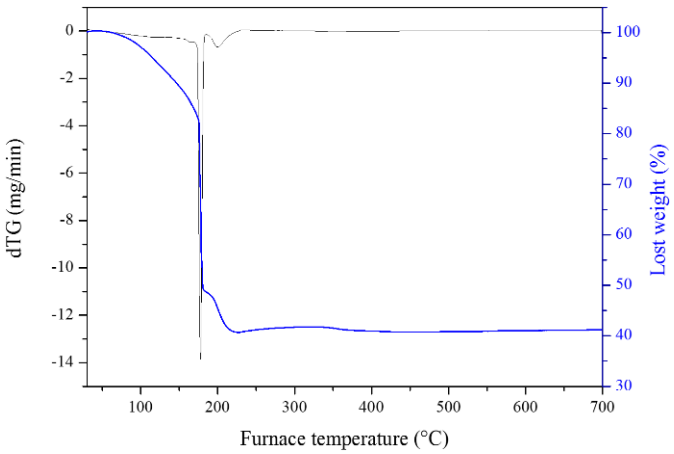


Fig. 5S TG/dTG curves of the as-prepared Cu(II)Fe(III)-LDH.

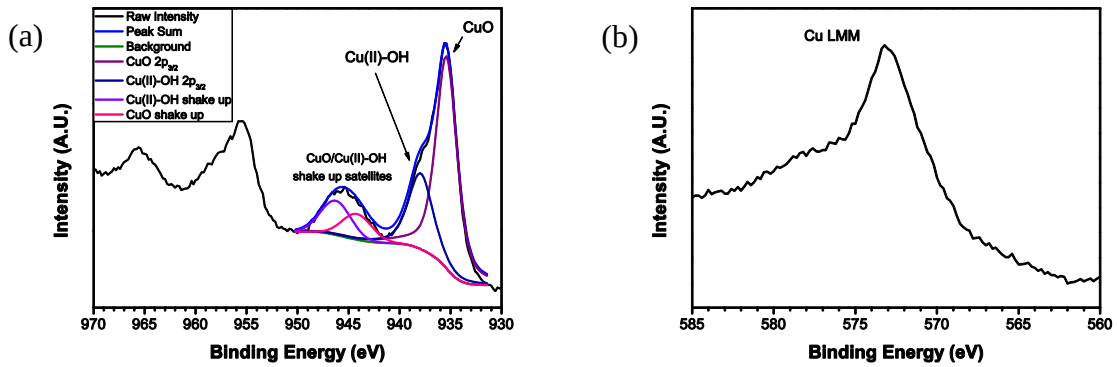
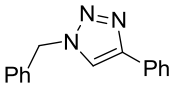


Fig. 6S XPS spectra indicating the presence of only Cu(II) ions for the as-prepared material (a) and as well as for the LDH sample after the 10-hour long run.

Table 1S Elemental composition of the Cu(II)Fe(III)-LDH determined by ICP−AES.

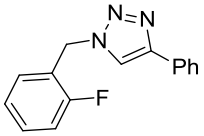
Sample	Cu		Fe		Cu/Fe
	wt%	mmol/g	wt%	mmol/g	
as-prepared	32.4510	5.107	16.2111	2.903	1.76
after the 10-hour long run	32.4422	5.105	16.2084	2.902	1.76

*1-Benzyl-4-phenyl-1H-1,2,3-triazole, **1**:*



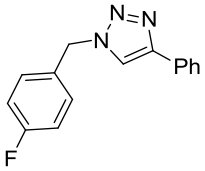
White solid; mp: 121–124 °C (lit.[S1] mp: 123–125 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.60 (s, 2H, CH_2), 7.31–7.38 (m, 3H, Ar-H), 7.38–7.47 (m, 5H, Ar-H), 7.70 (s, 1H, Ar-H), 7.80–7.88 (d, 2H, Ar-H, *J*=7.8 Hz).

*1-(2-Fluorobenzyl)-4-phenyl-1H-1,2,3-triazole, **2**:*



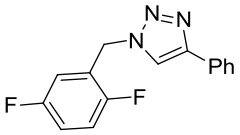
White solid; mp: 87–91 °C (lit.[S2] mp: 89–92 °C); NMR data is in agreement with the literature reference.[S3] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.63 (s, 2H, CH_2), 7.07–7.21 (m, 2H, Ar-H), 7.27–7.47 (m, 5H, Ar-H), 7.77 (s, 1H, Ar-H), 7.78–7.86 (d, 2H, Ar-H, *J*=7.8 Hz).

*1-(4-Fluorobenzyl)-4-phenyl-1H-1,2,3-triazole, **3**:*



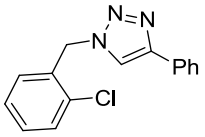
White solid; mp: 130–133 °C (lit.[S4] mp: 129–131 °C); NMR data is in agreement with the literature reference.[S4]] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.52 (s, 2H, CH_2), 6.98–7.11 (t, 2H, Ar-H, *J*=8.1 Hz), 7.23–7.35 (m, 3H, Ar-H), 7.36–7.45 (m, 2H, Ar-H), 7.67 (s, 1H, Ar-H), 7.74–7.85 (d, 2H, Ar-H, *J*=7.4 Hz).

*1-(2,5-Difluorobenzyl)-4-phenyl-1H-1,2,3-triazole, **4**:*



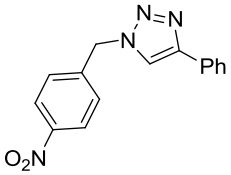
White solid; mp: 100–103 °C (lit.[S2] mp: 98–102 °C); NMR data is in agreement with the literature reference.[S2] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.61 (s, 2H, CH_2), 6.93–7.16 (m, 3H, Ar-H), 7.29–7.36 (m, 1H, Ar-H), 7.37–7.46 (m, 2H, Ar-H), 7.73–7.89 (m, 3H, Ar-H).

1-(2-Chlorobenzyl)-4-phenyl-1H-1,2,3-triazole, ***5****:*



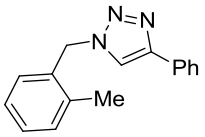
White solid; mp: 80–83 °C (lit.[S5] mp: 79–81 °C); NMR data is in agreement with the literature reference.[S5] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.71 (s, 2H, CH_2), 7.18–7.35 (m, 4H, Ar-H), 7.36–7.48 (m, 3H, Ar-H), 7.78 (s, 1H, Ar-H), 7.79–7.88 (d, 2H, Ar-H, *J*=7.8 Hz).

1-(4-Nitrobenzyl)-4-phenyl-1H-1,2,3-triazole, ***6****:*



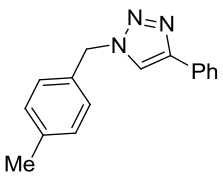
Yellowish solid; mp: 156–159 °C (lit.[S1] mp: 158–159 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.71 (s, 2H, CH_2), 7.30–7.40 (t, 1H, Ar-H, *J*=7.9 Hz), 7.40–7.50 (m, 4H, Ar-H), 7.77 (s, 1H, Ar-H), 7.80–7.88 (d, 2H, Ar-H, *J*=7.7 Hz), 8.20–8.31 (d, 2H, Ar-H, *J*=8.3 Hz).

1-(2-Methylbenzyl)-4-phenyl-1H-1,2,3-triazole, ***7****:*



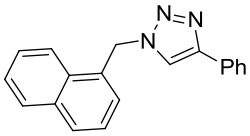
White solid; mp: 91–94 °C (lit.[S6] mp: 94–95 °C); NMR data is in agreement with the literature reference.[S6] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 2.32 (s, 3H, CH_3), 5.56 (s, 2H, CH_2), 7.18–7.27 (m, 3H, Ar-H), 7.27–7.34 (m, 2H, Ar-H), 7.35–7.43 (t, 2H, Ar-H, *J*=7.3 Hz), 7.55 (s, 1H, Ar-H), 7.75–7.84 (d, 2H, Ar-H, *J*=7.3 Hz).

1-(4-Methylbenzyl)-4-phenyl-1H-1,2,3-triazole, ***8****:*



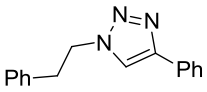
White solid; mp: 92–94 °C (lit.[S1] mp: 93–95 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 2.36 (s, 3H, CH_3), 5.52 (s, 2H, CH_2), 7.15–7.25 (m, 4H, Ar-H), 7.29–7.34 (m, 1H, Ar-H), 7.35–7.43 (m, 2H, Ar-H),7.65 (s, 1H, Ar-H), 7.75–7.83 (d, 2H, Ar-H, *J*=7.4 Hz).

1-(Naphthalen-1-ylmethyl)-4-phenyl-1H-1,2,3-triazole, ***9****:*



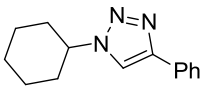
White solid; mp: 138–141 °C (lit.[S7] mp: 141–142 °C); NMR data is in agreement with the literature reference.[S7] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 5.76 (s, 2H, CH_2), 7.30–7.37 (m, 1H, Ar-H), 7.38–7.45 (m, 3H, Ar-H), 7.50–7.59 (m, 2H, Ar-H), 7.71 (s, 1H, Ar-H), 7.78–7.92 (m, 6H, Ar-H).

1-Phenethyl-4-phenyl-1H-1,2,3-triazole, ***10****:*



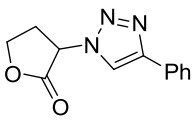
White solid; mp: 139–142 °C (lit.[S1] mp: 141–142 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 3.19–3.31 (t, 2H, CH_2, J=7.2 Hz), 4.56–4.68 (t, 2H, CH_2, J=7.2 Hz), 7.09–7.18 (d, 2H, Ar-H, J=7.3 Hz), 7.23–7.37 (m, 4H, Ar-H), 7.37–7.46 (m, 2H, Ar-H), 7.49 (s, 1H, Ar-H), 7.73–7.83 (d, 2H, Ar-H, J=7.3 Hz).

1-Cyclohexyl-4-phenyl-1H-1,2,3-triazole, ***11****:*



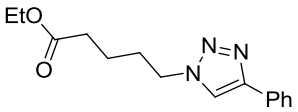
White solid; mp: 106–109 °C (lit.[S1] mp: 108–109 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 1.20–1.37 (m, 1H, CH_2), 1.38–1.56 (m, 2H, CH_2), 1.69–1.86 (m, 3H, 2 CH_2), 1.86–2.01 (m, 2H, CH_2), 2.16–2.32 (m, 2H, CH_2), 4.40–4.54 (m, 1H, CH), 7.28–7.35 (m, 1H, Ar-H), 7.36–7.46 (m, 2H, Ar-H), 7.70–7.90 (m, 3H, Ar-H).

3-(4-Phenyl-1H-1,2,3-triazol-1-yl)dihydrofuran-2(3H)-one, ***12****:*



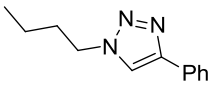
White solid; mp: 138–142 °C (lit.[S1] mp: 140–141 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 2.98–3.20 (m, 2H, CH_2), 4.46–4.62 (m, 1H, CH_2), 4.62–4.79 (m, 1H, CH_2), 5.30–5.46 (t, 1H, CH, J=9.1 Hz), 7.30–7.39 (m, 1H, Ar-H), 7.39–7.49 (m, 2H, Ar-H), 7.77–7.90 (d, 2H, Ar-H, J=7.7 Hz), 8.05 (s, 1H, Ar-H).

Ethyl 5-(4-phenyl-1H-1,2,3-triazol-1-yl)pentanoate, ***13****:*



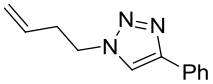
White solid; mp: 50–53 °C (lit.[S8] mp: 50–53 °C); NMR data is in agreement with the literature reference.[S8] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 1.17–1.29 (m, 3H, CH_3), 1.61–1.74 (m, 2H, CH_2), 1.92–2.05 (m, 2H, CH_2), 2.23–2.40 (m, 2H, CH_2), 4.03–4.17 (m, 2H, CH_2), 4.33–4.45 (m, 2H, CH_2), 7.28–7.35 (m, 1H, Ar-H), 7.36–7.45 (m, 2H, Ar-H), 7.72–7.86 (m, 3H, Ar-H).

1-Butyl-4-phenyl-1H-1,2,3-triazole, ***14****:*



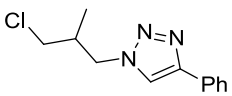
White solid; mp: 46–49 °C (lit.[S9] mp: 46–47 °C); NMR data is in agreement with the literature reference.[S9] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 0.92–1.04 (t, 3H, CH_3, J=7.4 Hz), 1.36–1.46 (m, 2H, CH_2), 1.88–1.99 (m, 2H, CH_2), 4.35–4.44 (t, 2H, CH_2, J=7.3 Hz), 7.30–7.37 (m, 1H, Ar-H), 7.38–7.46 (m, 2H, Ar-H), 7.75 (s, 1H, Ar-H), 7.79–7.88 (d, 2H, Ar-H, J=7.5 Hz).

1-(But-3-en-1-yl)-4-phenyl-1H-1,2,3-triazole, ***15****:*



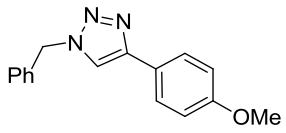
Brownish solid, mp: 40–43 °C (lit.[S10] mp: 42–44 °C); NMR data is in agreement with the literature reference.[S11] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 2.63–2.76 (m, 2H, CH_2), 4.38–4.53 (t, 2H, CH_2, J=7.2 Hz), 5.03–5.19 (d, 2H, CH_2, J=12.7 Hz), 5.71–5.87 (m, 1H, CH), 7.29–7.36 (m, 1H, Ar-H), 7.37–7.46 (m, 2H, Ar-H), 7.75 (s, 1H, Ar-H), 7.78–7.87 (d, 2H, Ar-H, J=7.4 Hz).

1-(3-Chloro-2-methylpropyl)-4-phenyl-1H-1,2,3-triazole, ***16****:*



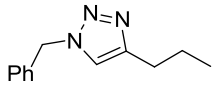
White solid; mp: 48–50 °C (lit.[S8] mp: 50–51 °C); NMR data is in agreement with the literature reference.[S8] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 1.06–1.15 (d, 3H, CH_3, J=6.7 Hz), 2.51–2.64 (m, 1H, CH),), 3.40–3.52 (m, 2H, CH_2), 4.28–4.52 (m, 2H, CH_2), 7.28–7.37 (m, 1H, Ar-H), 7.38–7.47 (m, 2H, Ar-H), 7.75–7.89 (m, 3H, Ar-H).

1-benzyl-4-(4-methoxyphenyl)-1H-1,2,3-triazole, ***17****:*



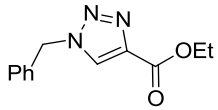
White solid; mp: 140–143 °C (lit.[S1] mp: 143–145 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 3.81 (s, 3H, CH_3), 5.53 (s, 2H, CH_2), 6.88–6.97 (d, 2H, Ar-H, *J*=8.5 Hz), 7.27–7.41 (m, 5H, Ar-H), 7.59 (s, 1H, Ar-H), 7.69–7.76 (d, 2H, Ar-H, *J*=8.6 Hz).

1-Benzyl-4-propyl-1H-1,2,3-triazole, ***18****:*



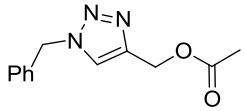
Brownish oil; NMR data is in agreement with the literature reference.[S11] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 0.93–1.01 (t, 3H, CH_3, *J*=7.2 Hz), 1.64–1.76 (m, 2H, CH_2), 2.65–2.76 (t, 2H, CH_2, *J*=7.6 Hz), 5.52 (s, 2H, CH_2), 7.25–7.30 (m, 2H, Ar-H), 7.32–7.45 (m, 4H, Ar-H).

Ethyl 1-benzyl-1H-1,2,3-triazole-4-carboxylate, ***19****:*



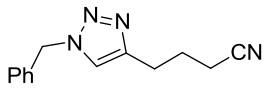
Yellowish solid; mp: 79–82 °C (lit. [S1] mp: 82–83 °C); NMR data is in agreement with the literature reference.[S1] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 1.30–1.46 (t, 3H, CH_3, *J*=7.2 Hz), 4.32–4.46 (q, 2H, CH_2, *J*=7.1 Hz), 5.59 (s, 2H, CH_2), 7.24–7.35 (m, 2H, Ar-H), 7.35–7.46 (m, 3H, Ar-H), 8.02 (s, 1H, Ar-H).

(1-Benzyl-1H-1,2,3-triazol-4-yl)methyl acetate, ***20****:*



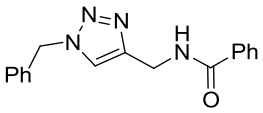
Yellowish solid; mp: 55–58 °C (lit.[S8] mp: 55–56 °C); NMR data is in agreement with the literature reference.[S8] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 2.05 (s, 3H, CH_3), 5.20 (s, 2H, CH_2), 5.52 (s, 2H, CH_2), 7.23–7.31 (m, 2H, Ar-H), 7.34–7.41 (m, 3H, Ar-H), 7.57 (s, 1H, Ar-H).

4-(1-Benzyl-1H-1,2,3-triazol-4-yl)butanenitrile, ***21****:*



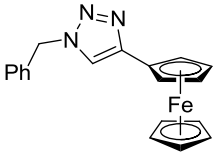
White solid; mp: 61–64 °C (lit.[S8] mp: 64–66 °C); NMR data is in agreement with the literature reference.[S8] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 2.05–2.14 (m, 2H, CH_2), 2.40–2.47 (t, 2H, CH_2, *J*=7.0 Hz), 2.83–2.91 (t, 2H, CH_2, *J*=7.20 Hz), 5.53 (s, 2H, CH_2), 7.27–7.32 (m, 3H, Ar-H), 7.36–7.45 (m, 3H, Ar-H).

N-((1-benzyl-1H-1,2,3-triazol-4-yl)methyl)benzamide, ***22****:*



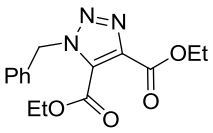
White solid; mp: 125–128 °C (lit.[S10] mp: 126–128 °C); NMR data is in agreement with the literature reference.[S12]] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 4.69–4.75 (d, 2H, CH_2, *J*=5.6 Hz), 5.55 (s, 2H, CH_2), 6.86 (m, 1H, NH), 7.31–7.34 (m, 1H, Ar-H), 7.37–7.50 (m, 5H, Ar-H), 7.51–7.58 (m, 2H, Ar-H), 7.77–7.84 (m, 2H, Ar-H).

1-Benzyl-4-ferrocenyl-1H-1,2,3-triazole, ***23****:*



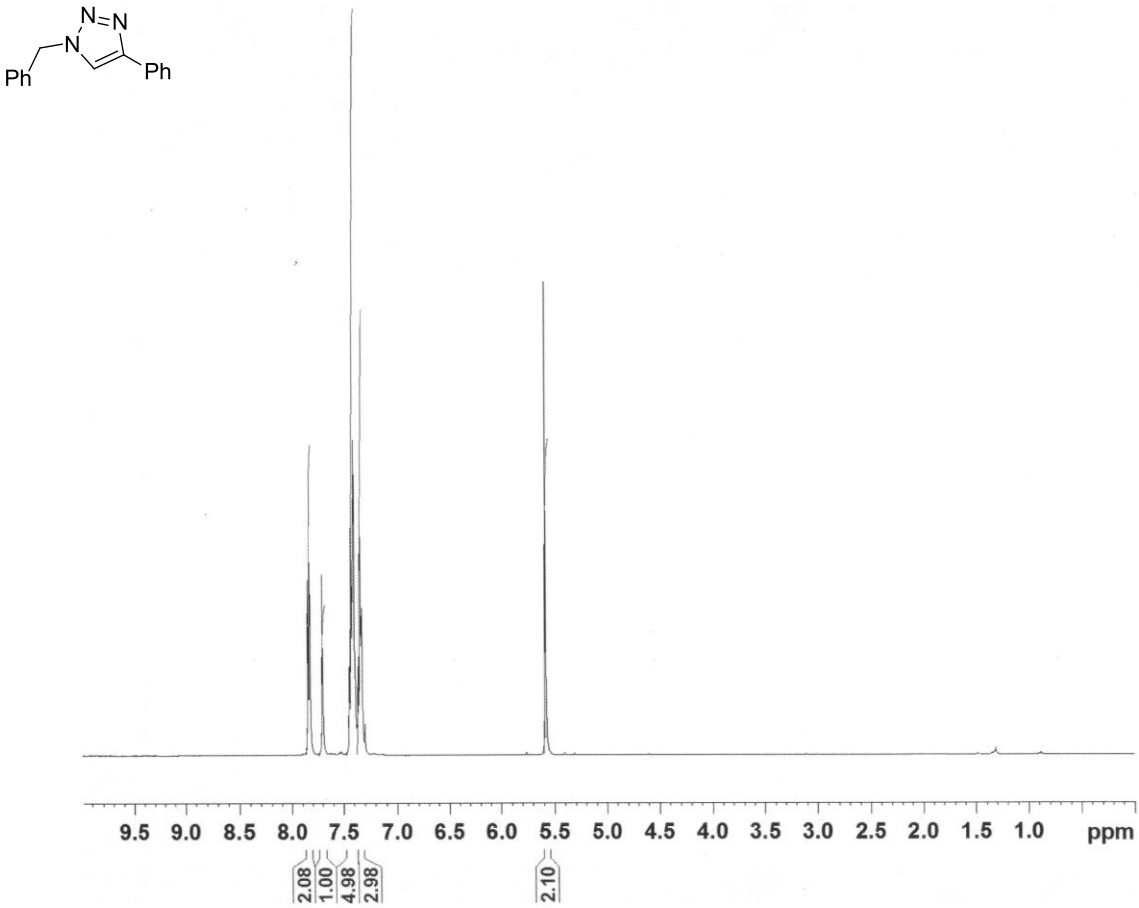
Golden yellow solid; mp: 147–150 °C (lit. [S13] mp: 145–147 °C); NMR data is in agreement with the literature reference.[S3] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 4.08 (s, 5H, Ar-H), 4.27–4.32 (m, 2H, Ar-H), 4.68–4.75 (m, 2H, Ar-H), 5.58 (s, 2H, CH_2), 7.31–7.34 (m, 2H, Ar-H), 7.35–7.45 (m, 4H, Ar-H).

Diethyl 1-benzyl-1H-1,2,3-triazole-4,5-dicarboxylate, ***24****:*

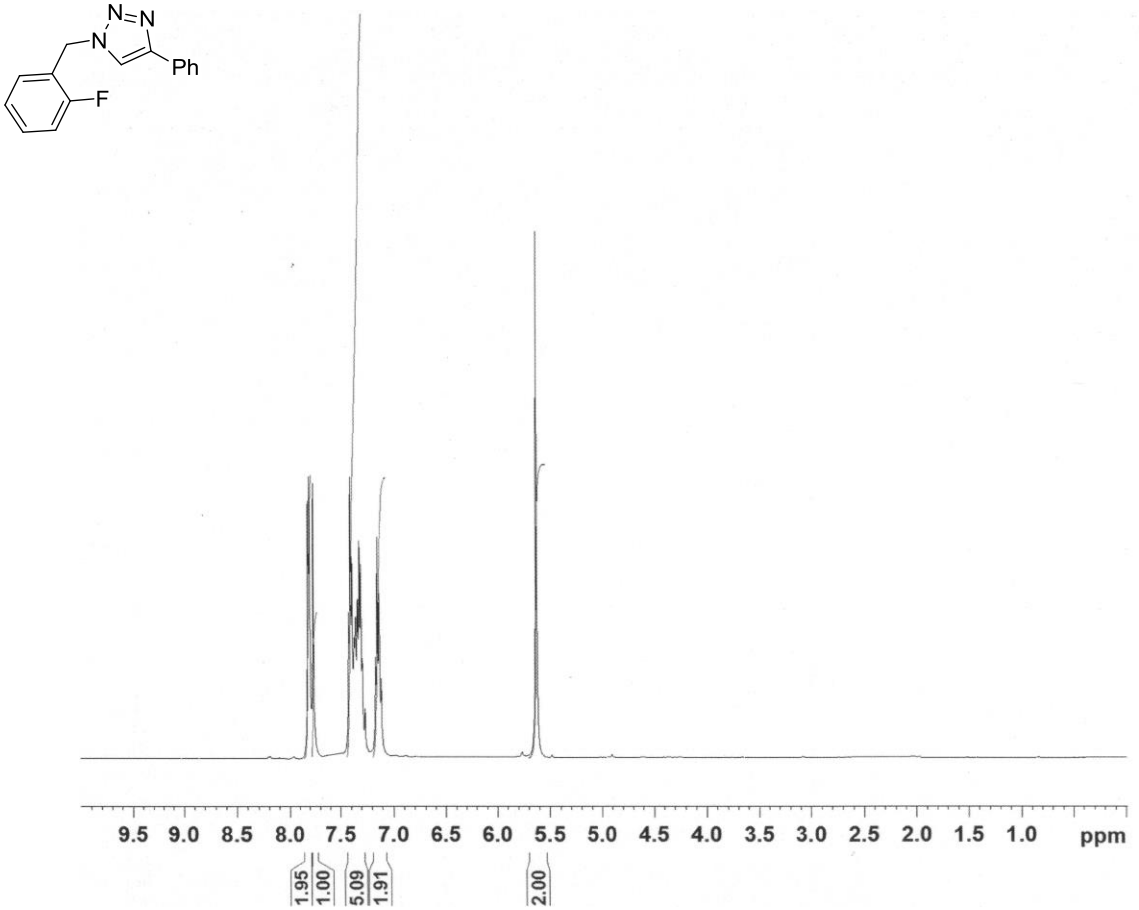


Colorless oil; NMR data is in agreement with the literature reference.[S14] ^{1}H NMR (400.1 MHz, $CDCl_3$) δ_H: 1.26–1.33 (t, 3H, CH_3, *J*=7.3 Hz), 1.39–1.44 (t, 3H, CH_3, *J*=7.3 Hz), 4.31–4.40 (q, 2H, CH_2, *J*=7.3 Hz), 4.41–4.50 (q, 2H, CH_2, *J*=7.3 Hz), 5.85 (s, 2H, CH_2), 7.26–7.31 (m, 3H, Ar-H), 7.33–7.38 (m, 2H, Ar-H).

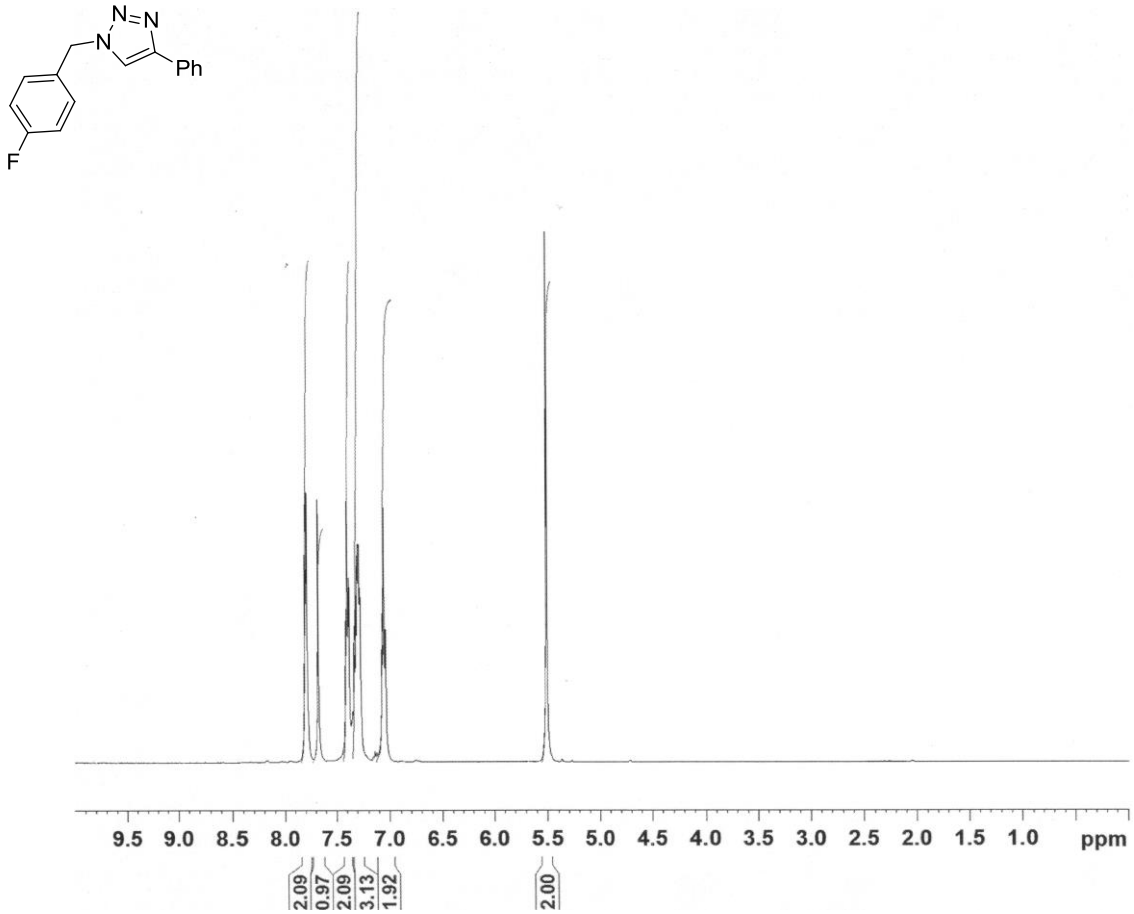
1-Benzyl-4-phenyl-1H-1,2,3-triazole, ***1****,* ^{1}*H NMR in* $CDCl_3$*:*



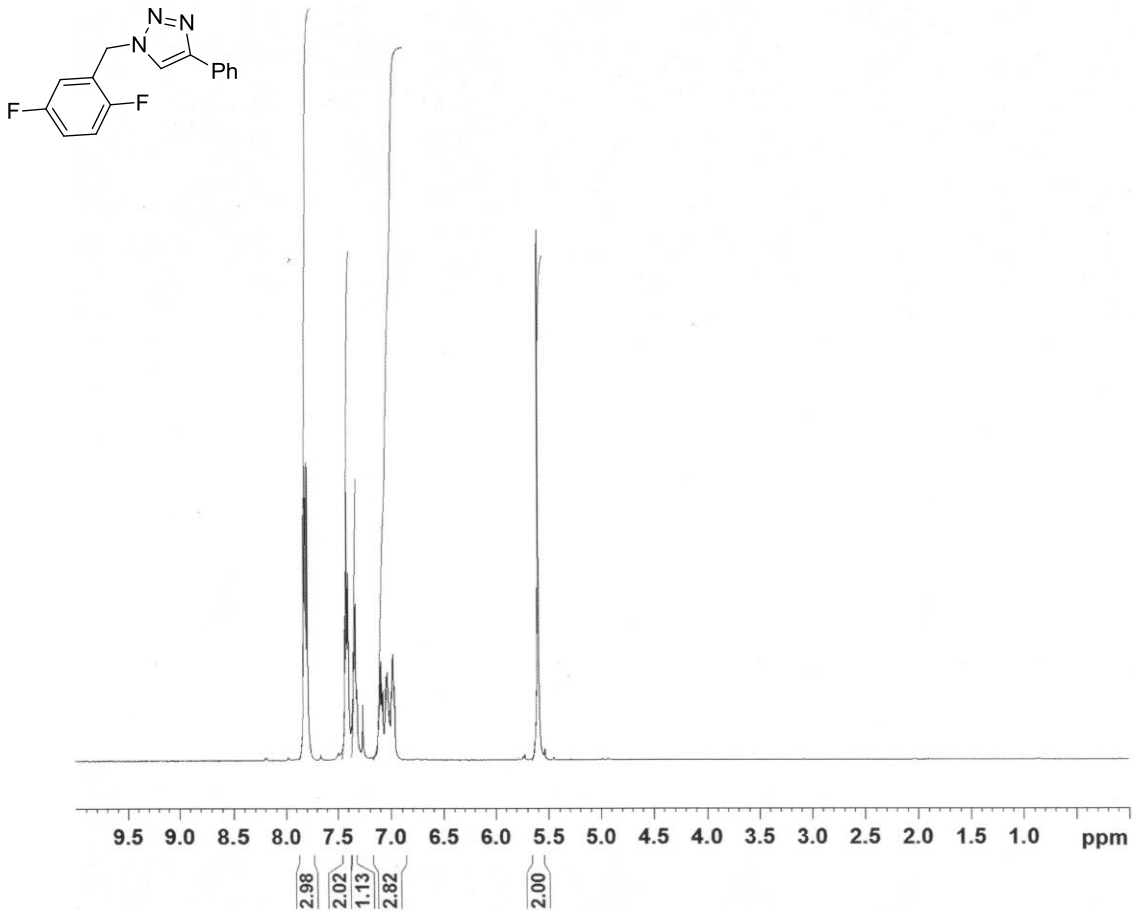
1-(2-Fluorobenzyl)-4-phenyl-1H-1,2,3-triazole, ***2****,* ^{1}*H NMR in* $CDCl_3$*:*



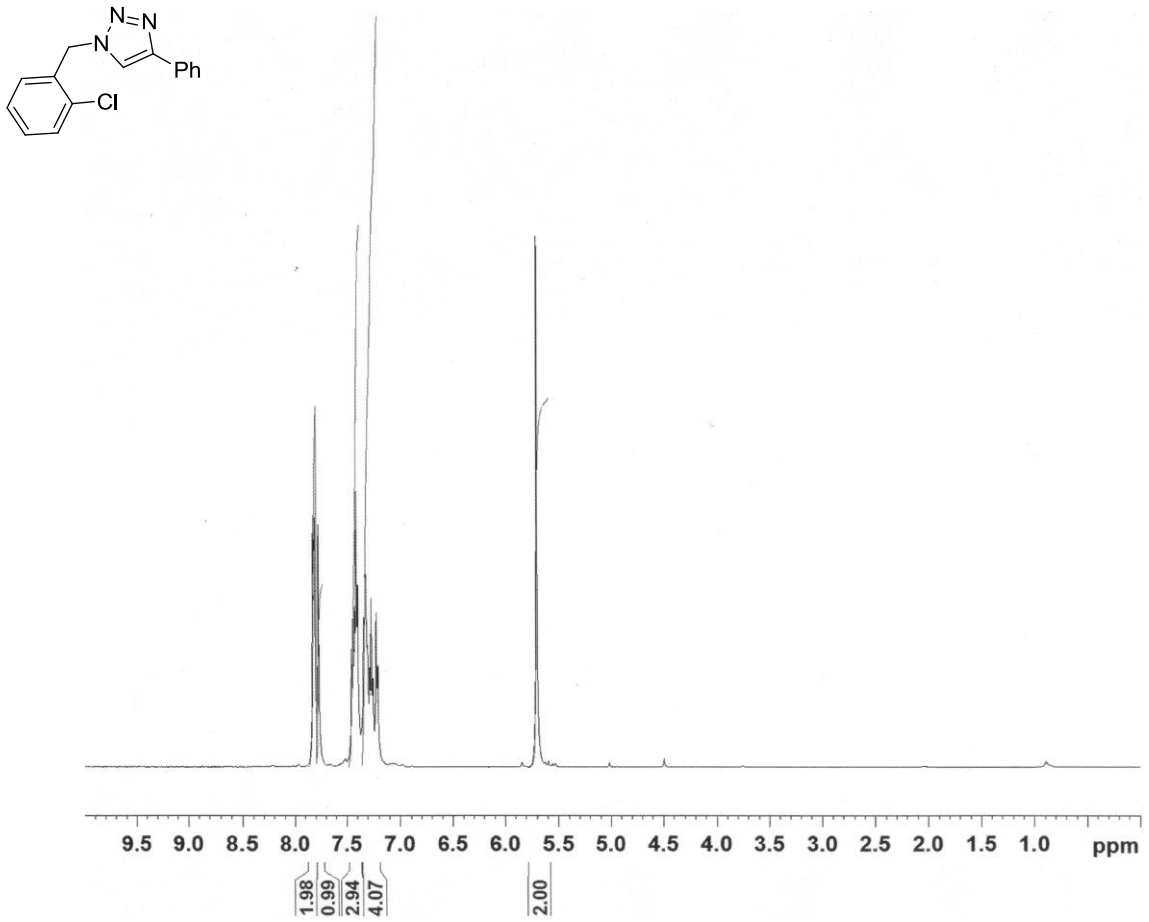
1-(4-Fluorobenzyl)-4-phenyl-1H-1,2,3-triazole, ***3****,* ^{1}*H NMR in* $CDCl_3$*:*



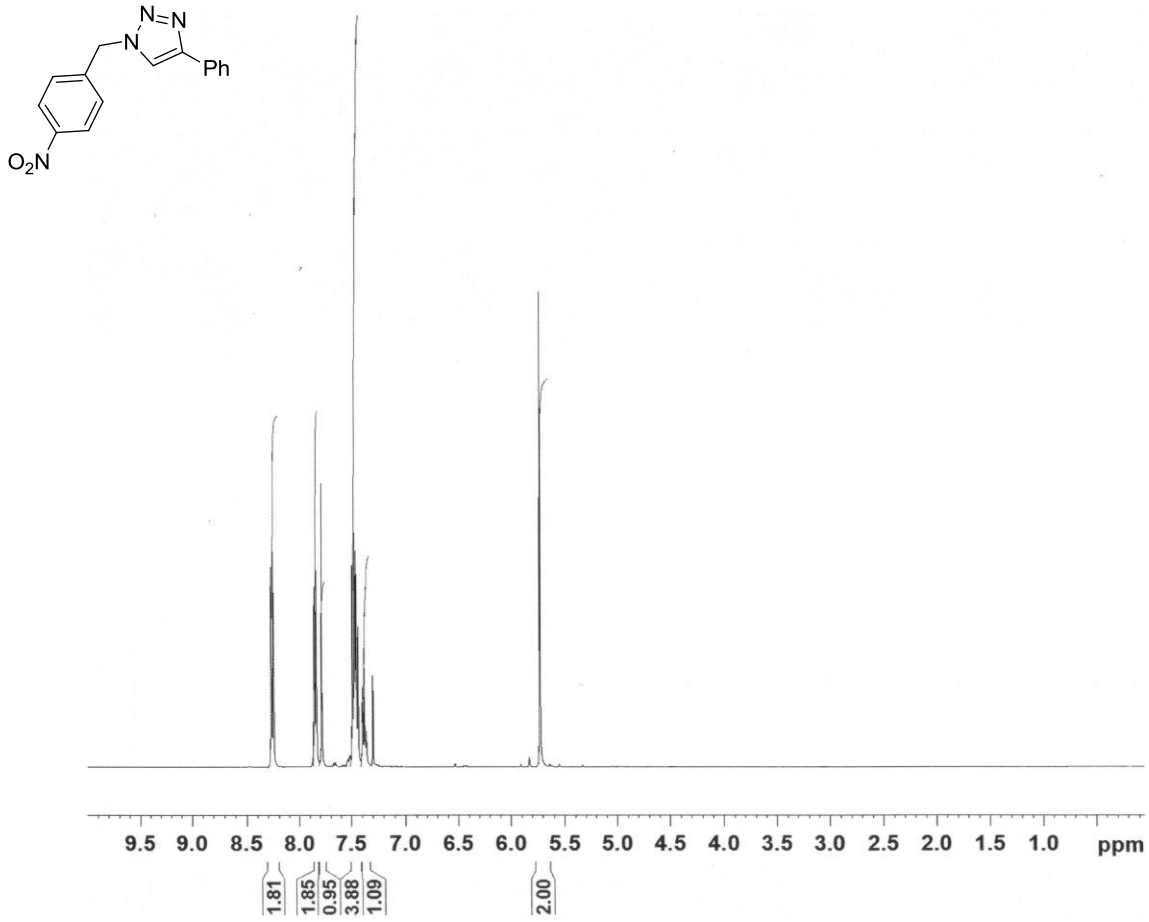
1-(2,5-Difluorobenzyl)-4-phenyl-1H-1,2,3-triazole, ***4****,* ^{1}*H NMR in* $CDCl_3$*:*



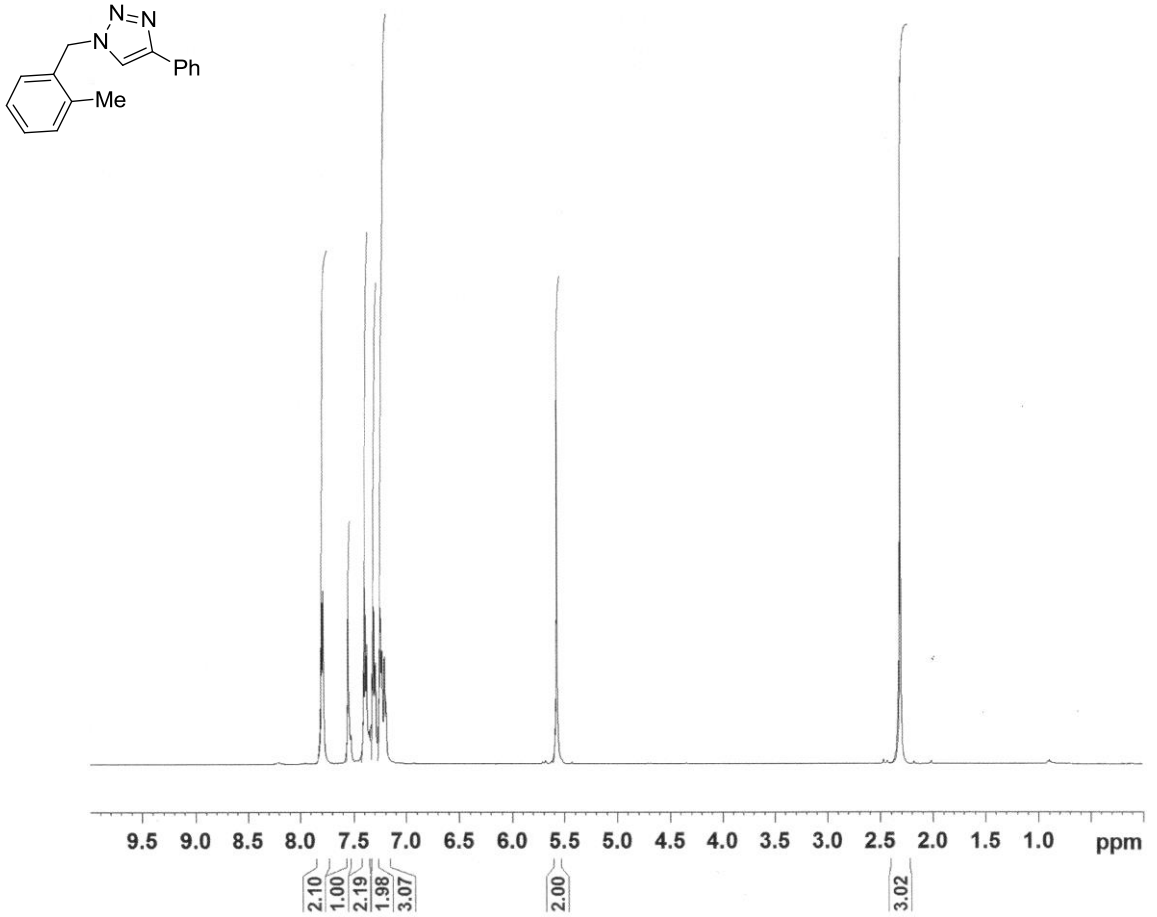
1-(2-Chlorobenzyl)-4-phenyl-1H-1,2,3-triazole, ***5****, ^{1}H NMR in $CDCl_3$:*



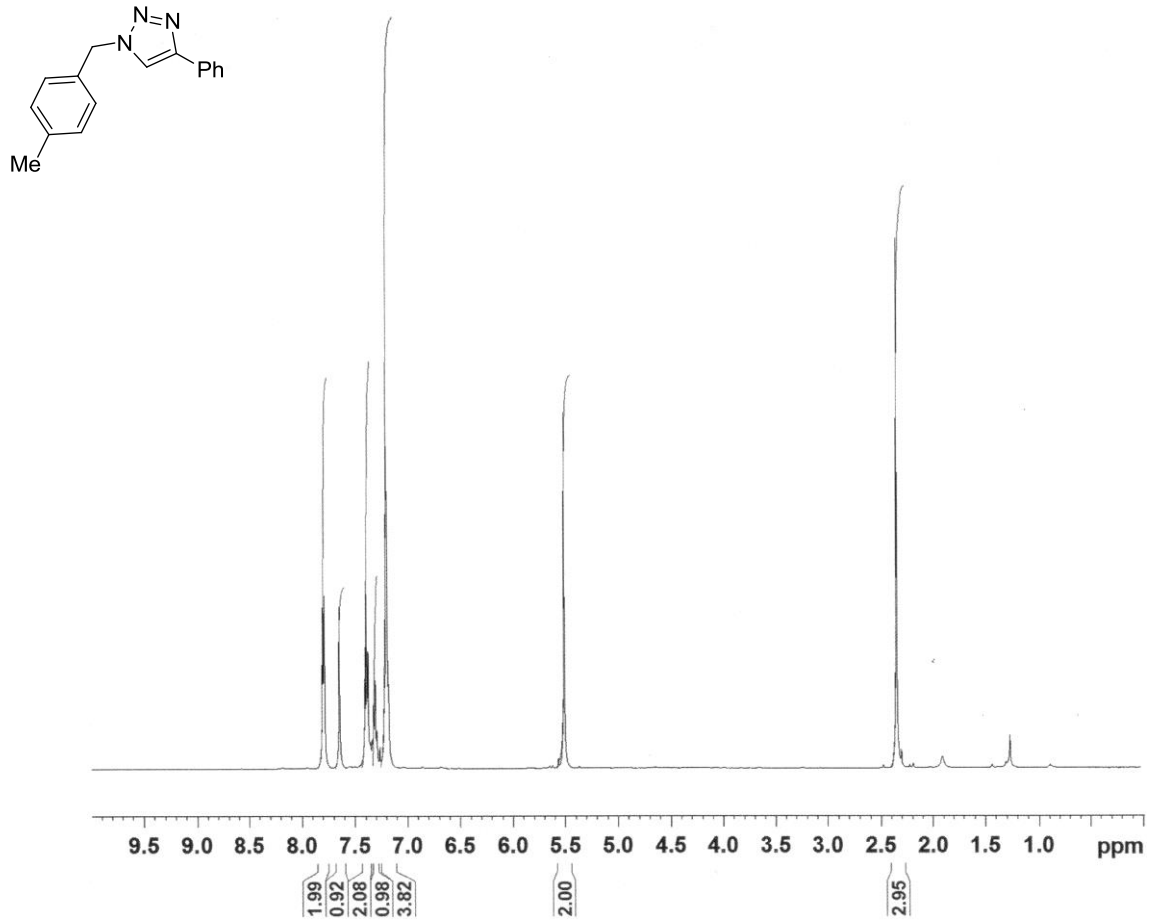
1-(4-Nitrobenzyl)-4-phenyl-1H-1,2,3-triazole, ***6****, ^{1}H NMR in $CDCl_3$:*



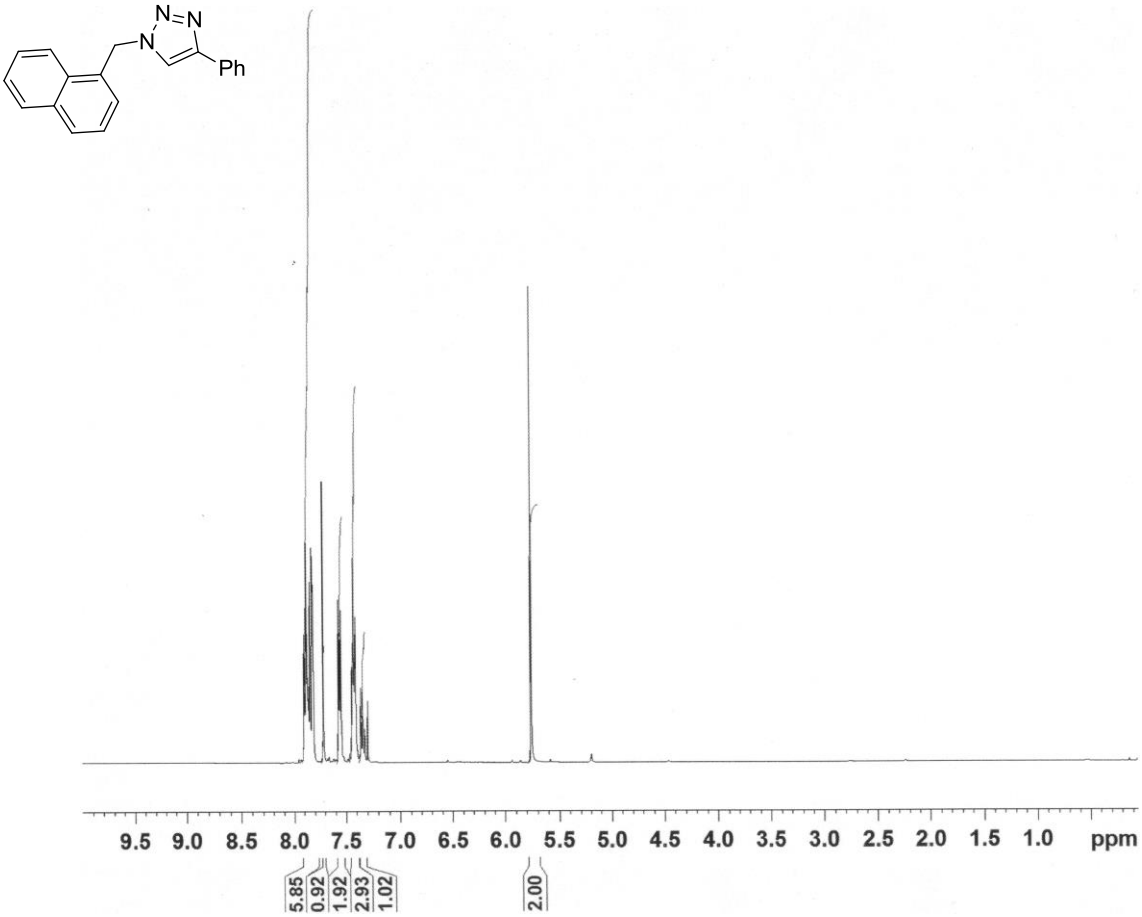
1-(2-Methylbenzyl)-4-phenyl-1H-1,2,3-triazole, ***7****, ^{1}H NMR in $CDCl_3$:*



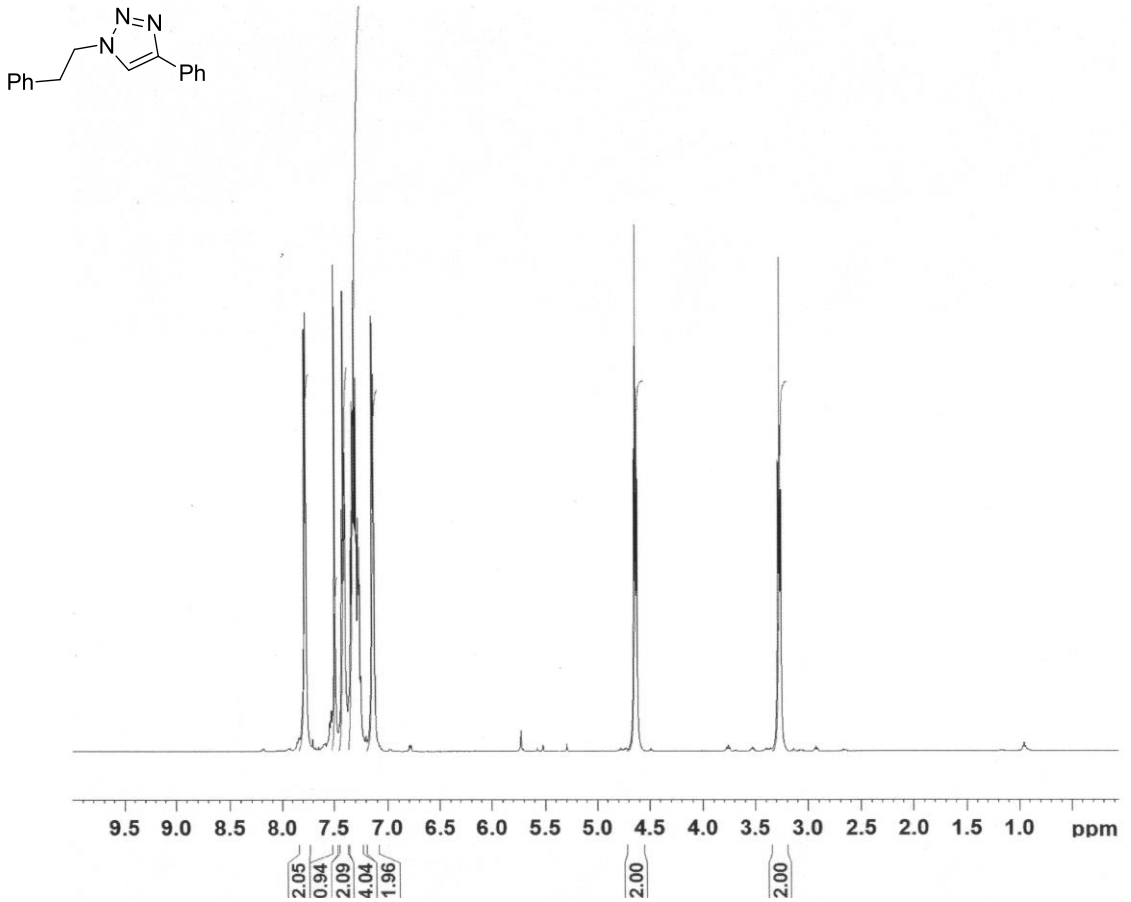
1-(4-Methylbenzyl)-4-phenyl-1H-1,2,3-triazole, ***8****, ^{1}H NMR in $CDCl_3$:*



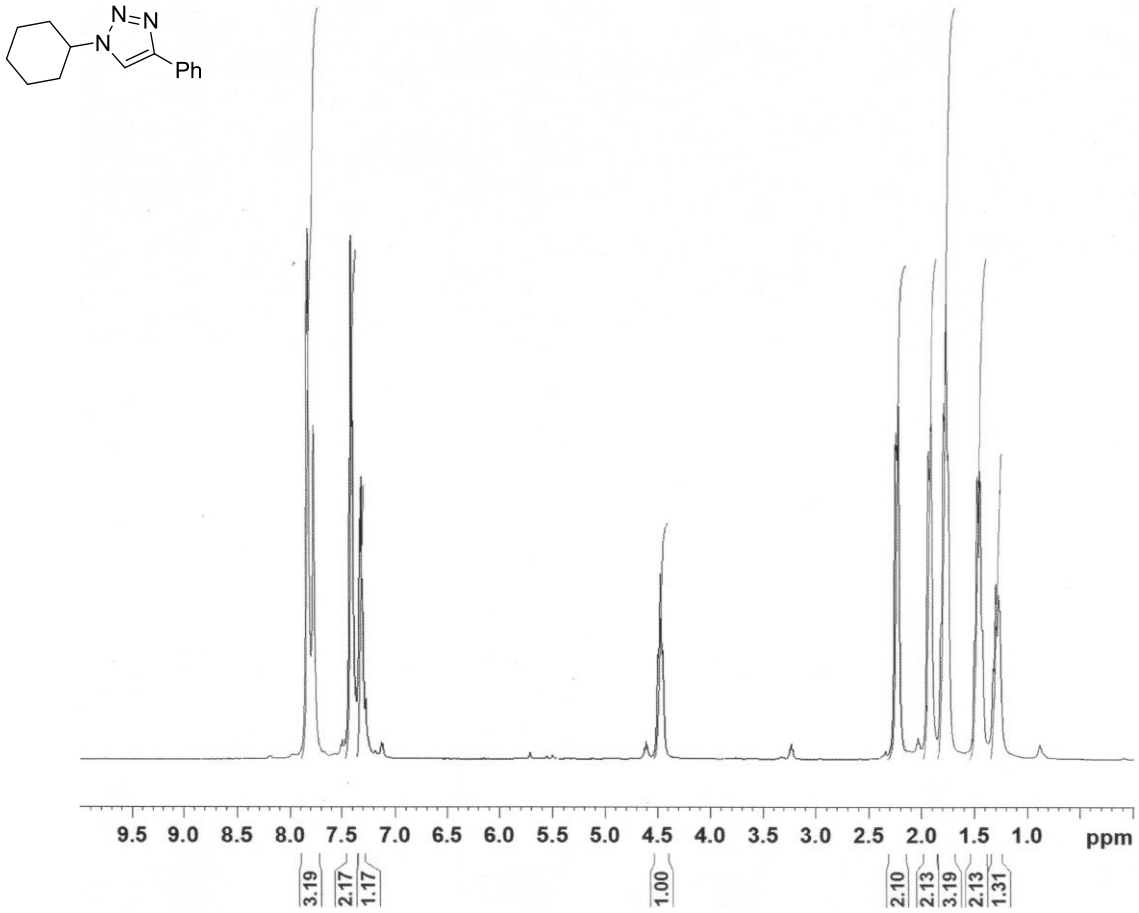
1-(Naphthalen-1-ylmethyl)-4-phenyl-1H-1,2,3-triazole, ***9****,* ^{1}*H NMR in* $CDCl_3$*:*



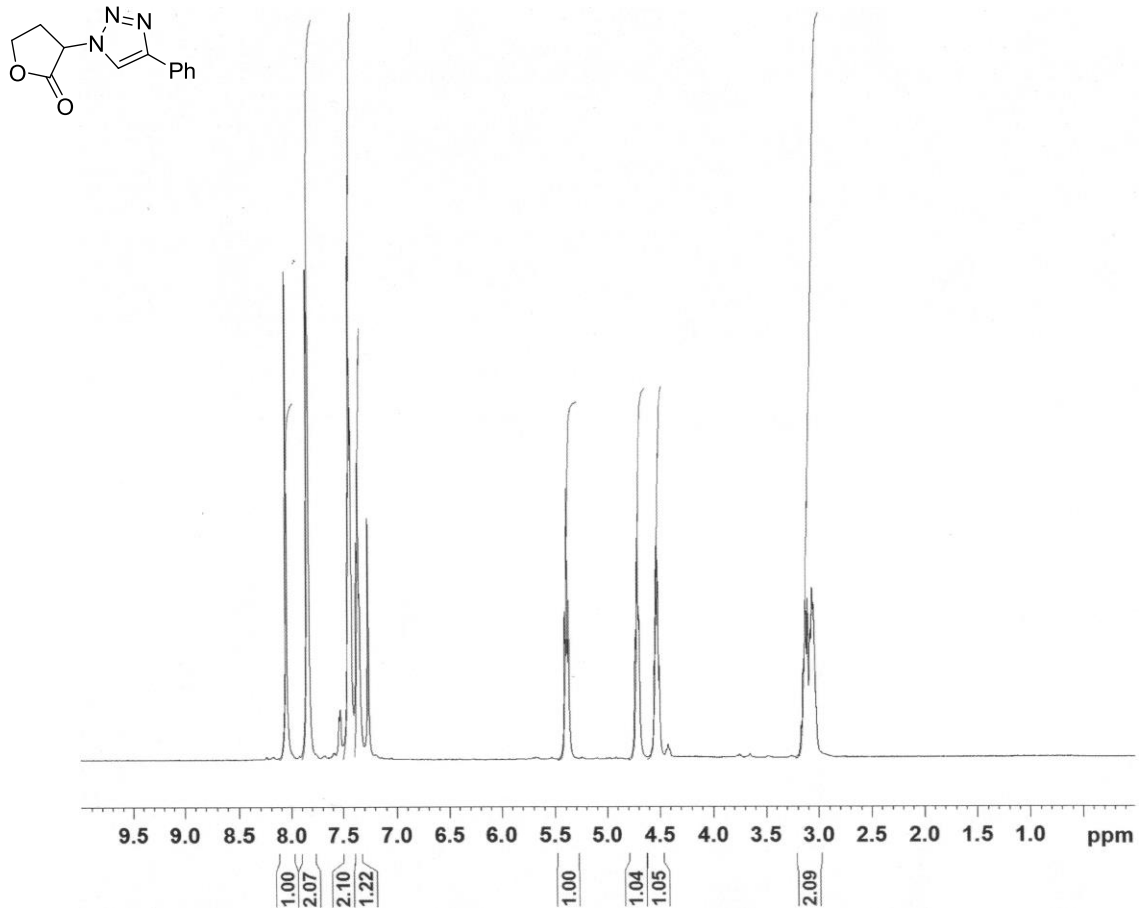
1-Phenethyl-4-phenyl-1H-1,2,3-triazole, ***10****,* ^{1}*H NMR in* $CDCl_3$*:*



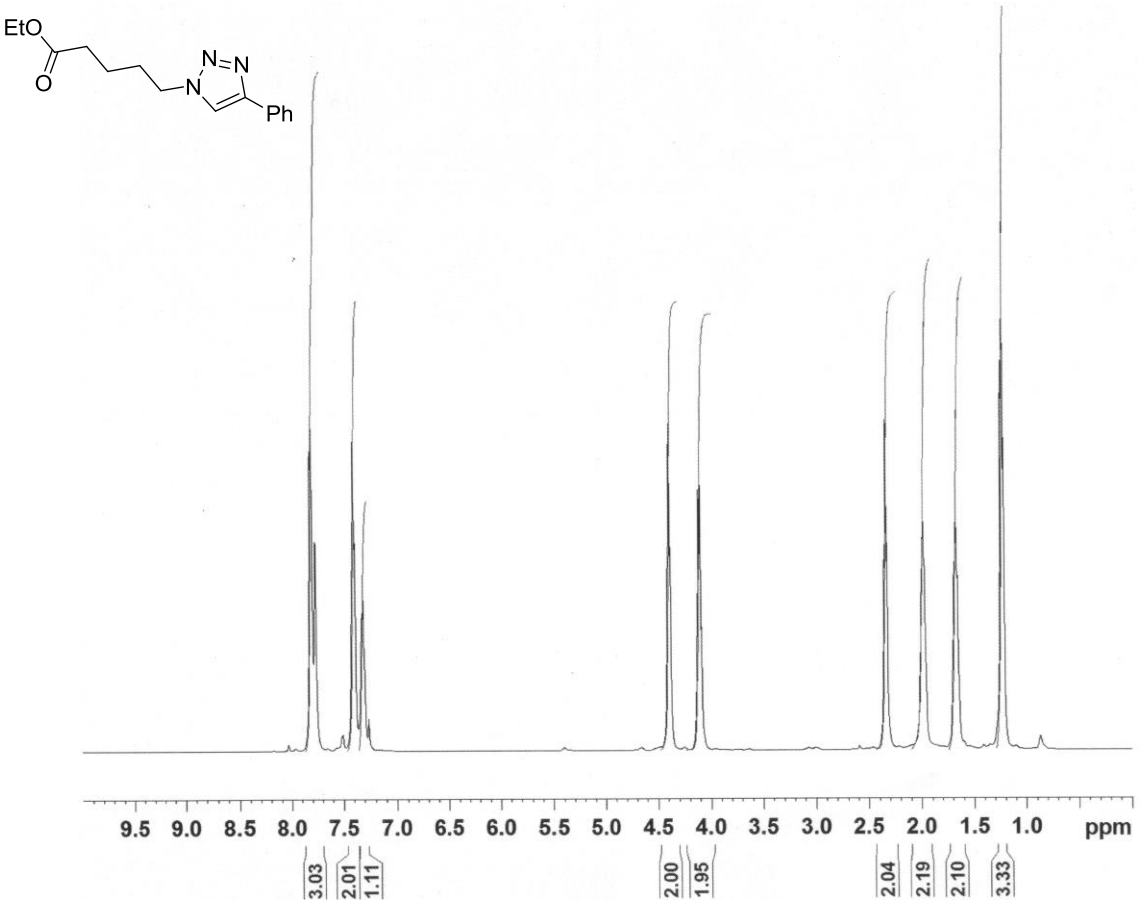
1-Cyclohexyl-4-phenyl-1H-1,2,3-triazole, ***11****, ^{1}H NMR in $CDCl_3$:*



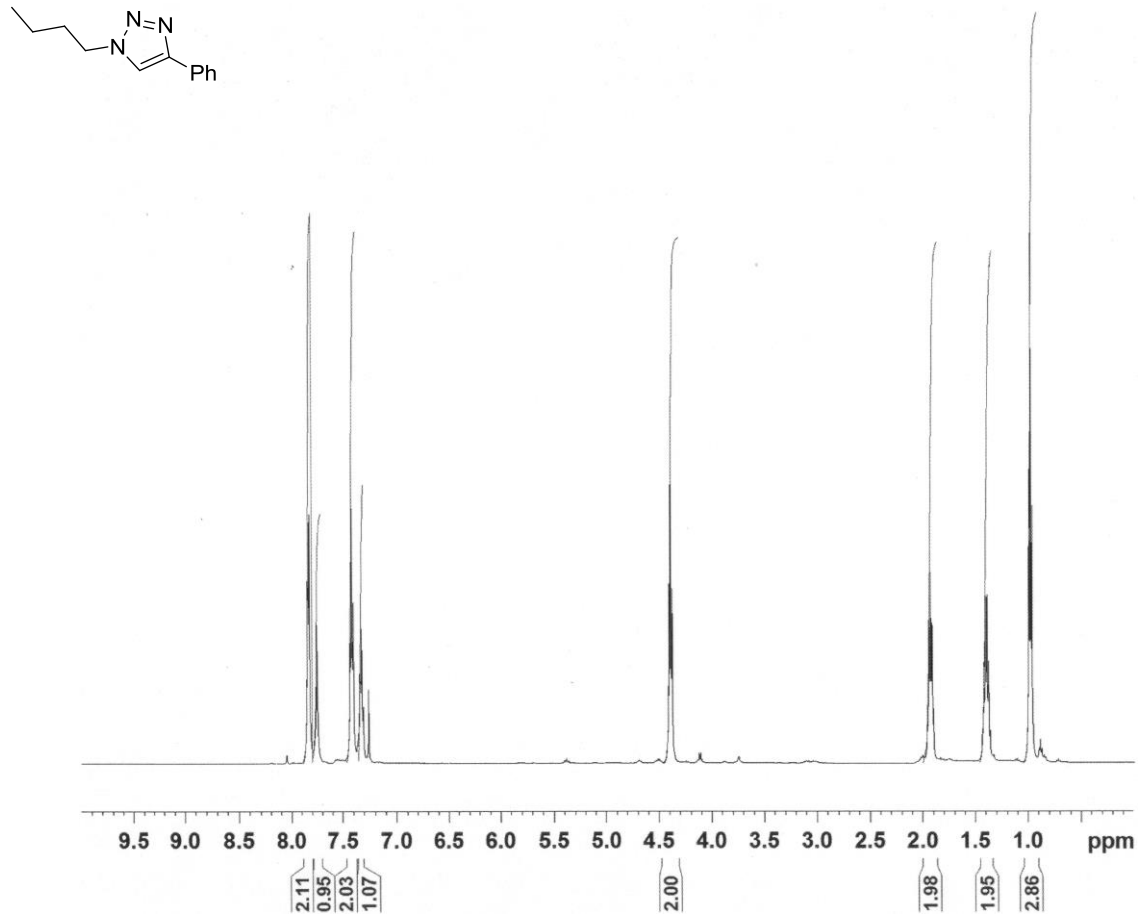
3-(4-Phenyl-1H-1,2,3-triazol-1-yl)dihydrofuran-2(3H)-one, ***12****, ^{1}H NMR in $CDCl_3$:*



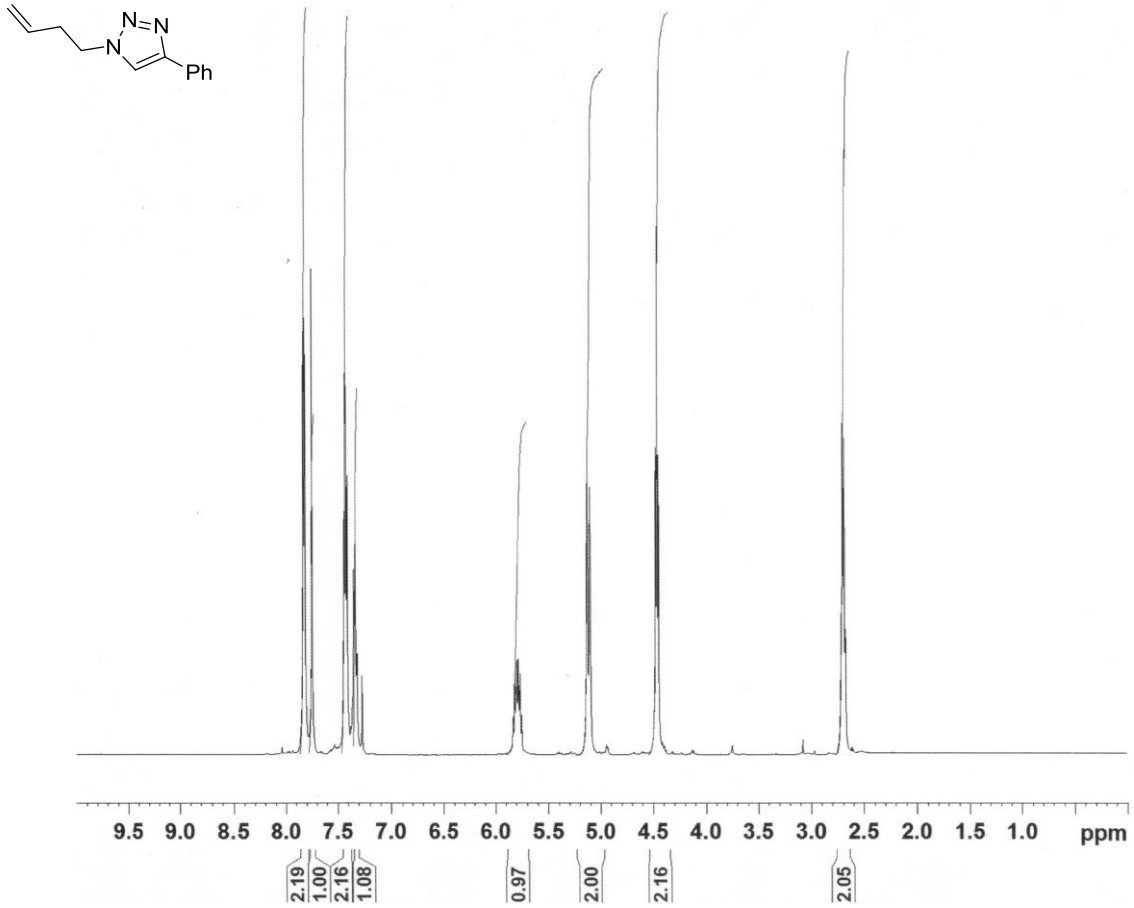
Ethyl 5-(4-phenyl-1H-1,2,3-triazol-1-yl)pentanoate, ***13****,* ^{1}*H NMR in* $CDCl_3$*:*



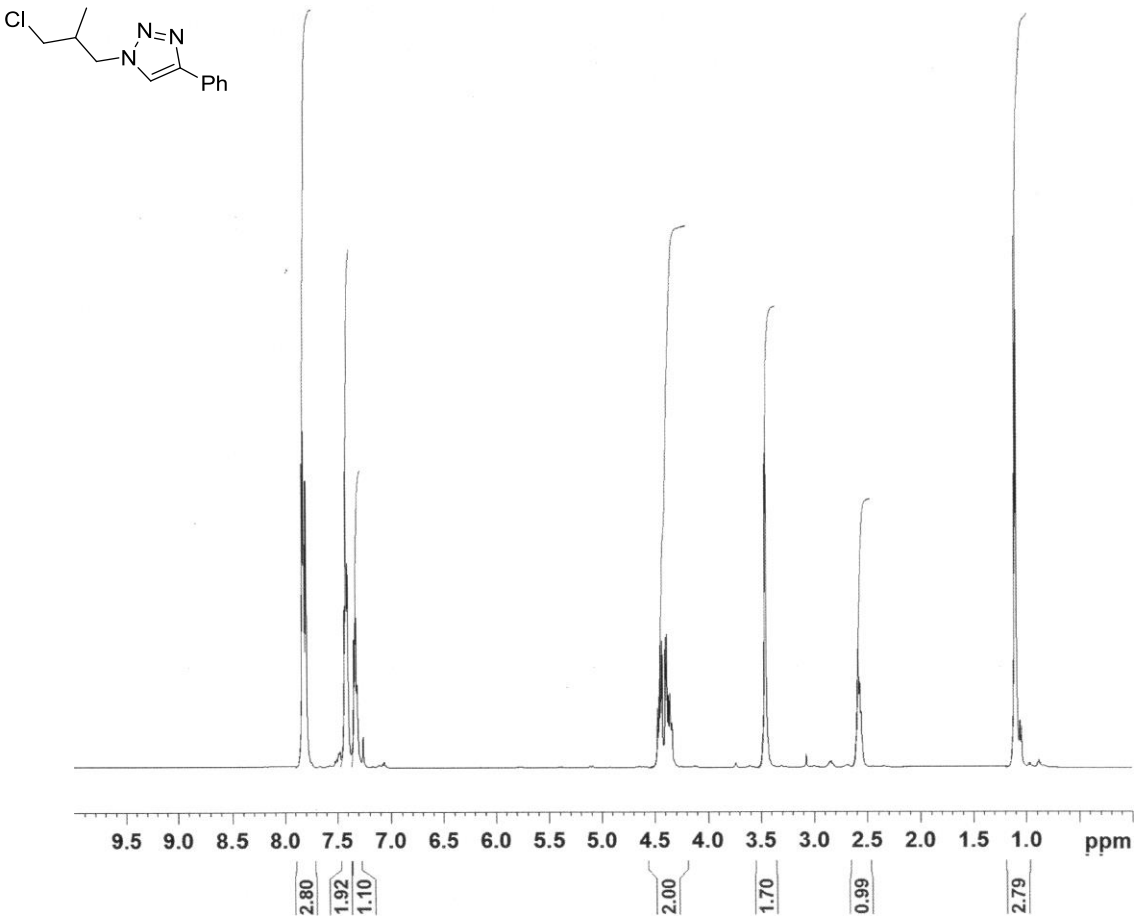
1-Butyl-4-phenyl-1H-1,2,3-triazole, ***14****,* ^{1}*H NMR in* $CDCl_3$*:*



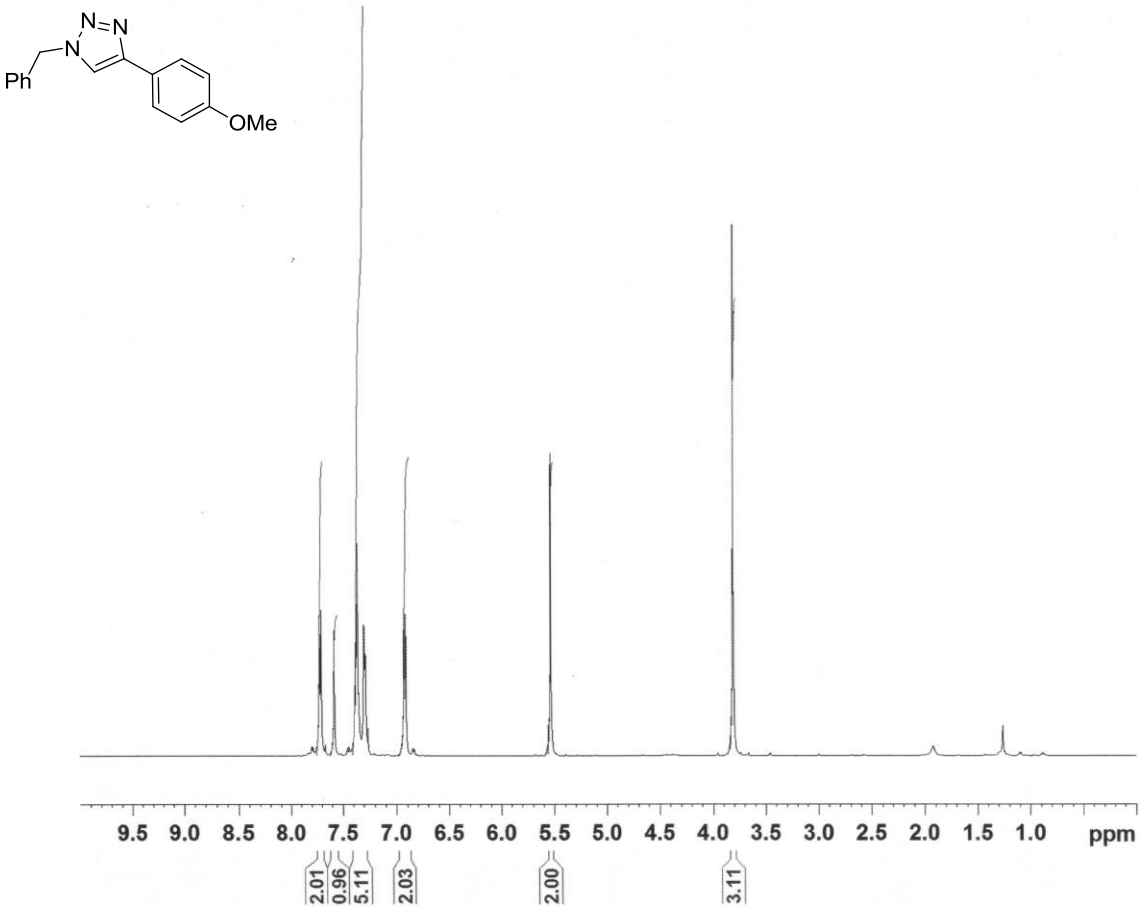
1-(But-3-en-1-yl)-4-phenyl-1H-1,2,3-triazole, ***15****,* ^{1}*H NMR in* $CDCl_3$*:*



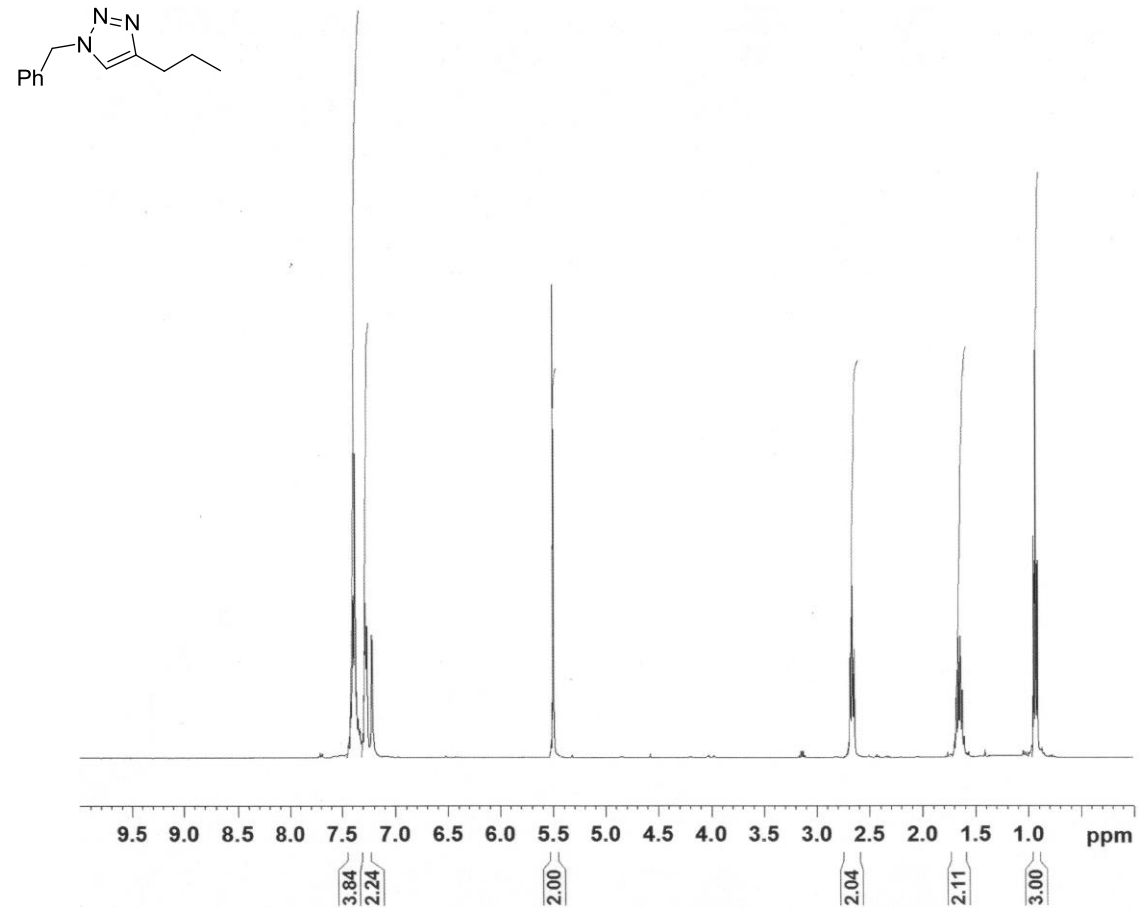
1-(3-Chloro-2-methylpropyl)-4-phenyl-1H-1,2,3-triazole, ***16****,* ^{1}*H NMR in* $CDCl_3$*:*



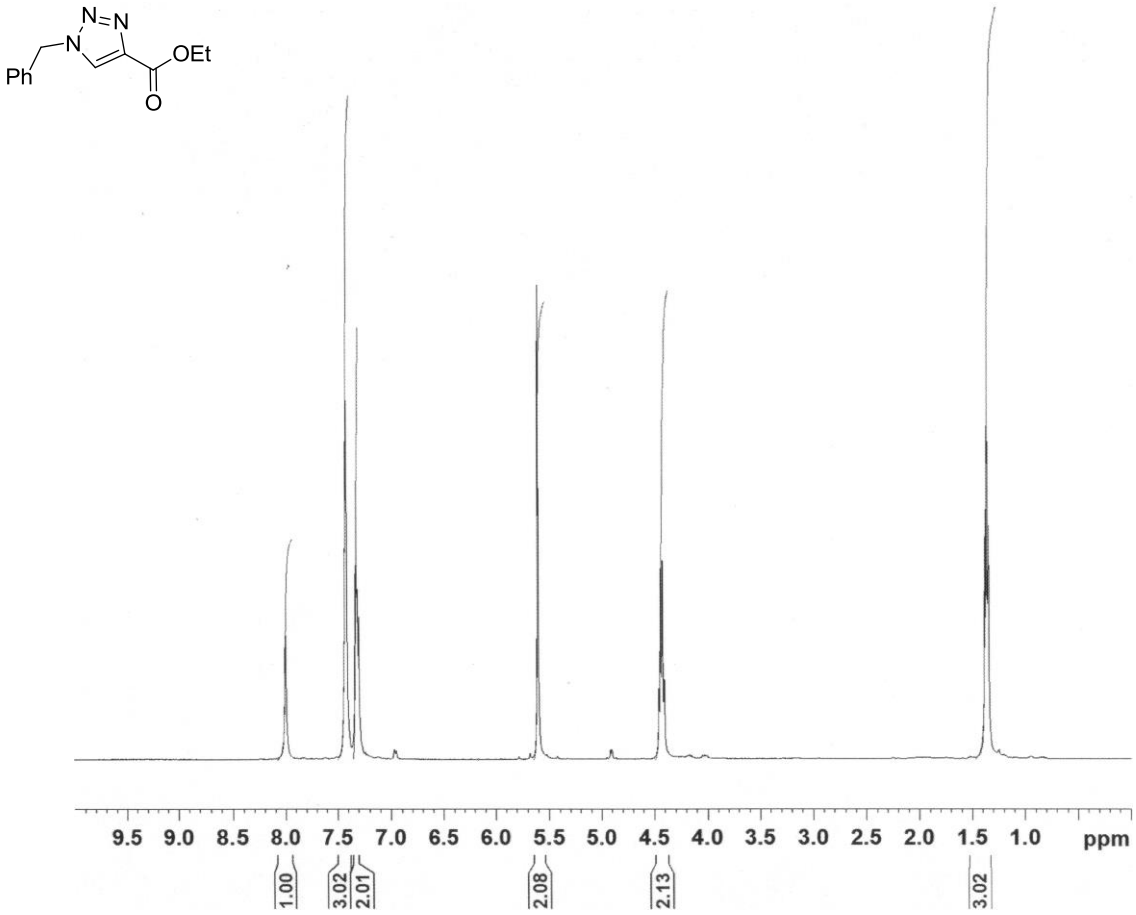
1-benzyl-4-(4-methoxyphenyl)-1H-1,2,3-triazole, ***17****, ^{1}H NMR in $CDCl_3$:*



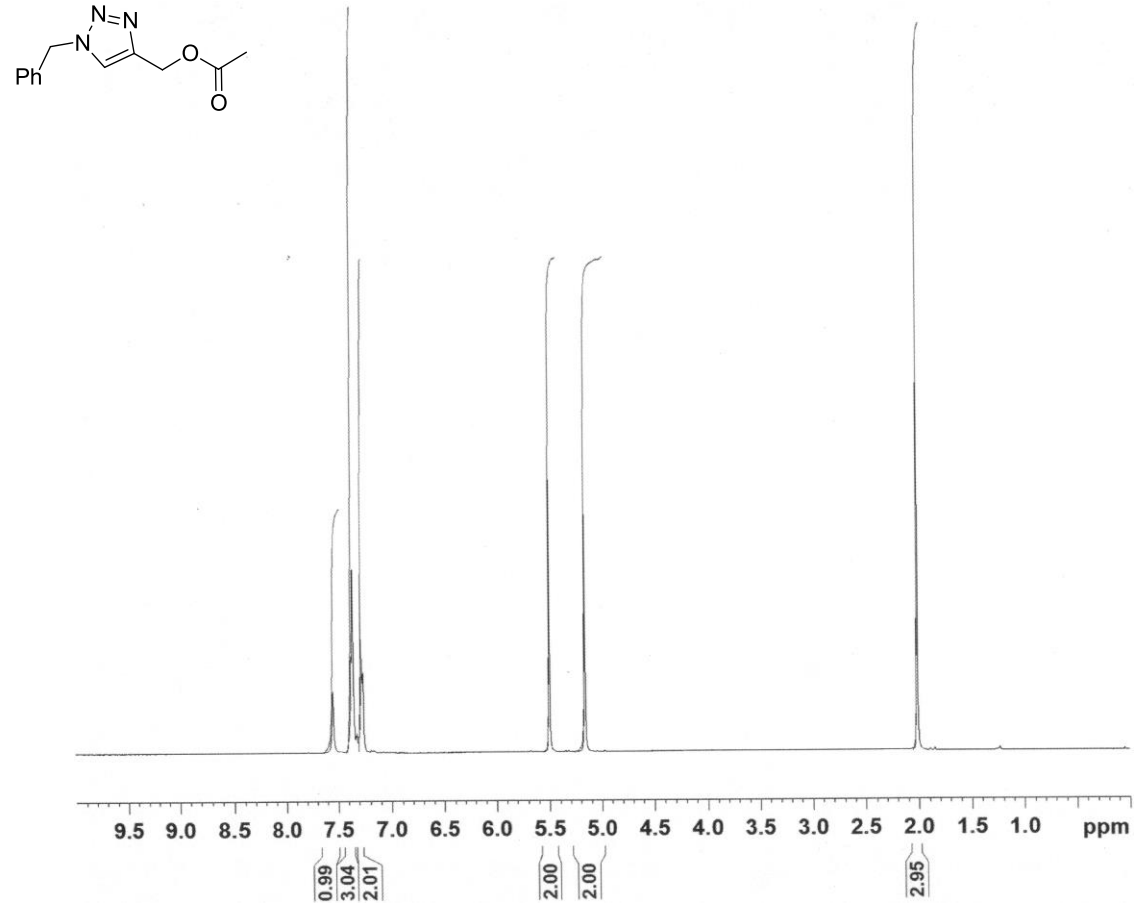
1-Benzyl-4-propyl-1H-1,2,3-triazole, ***18****, ^{1}H NMR in $CDCl_3$:*



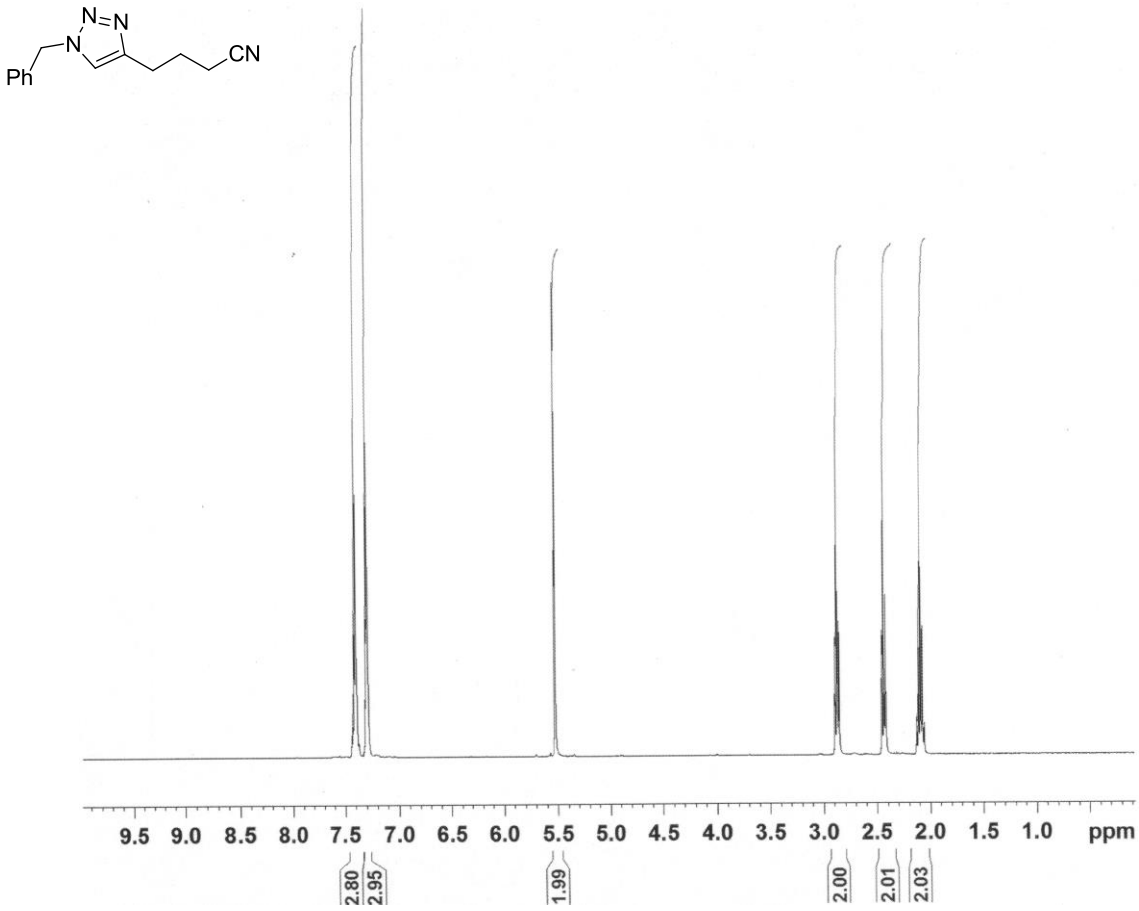
Ethyl 1-benzyl-1H-1,2,3-triazole-4-carboxylate, ***19****,* ^{1}H *NMR in* $CDCl_3$*:*



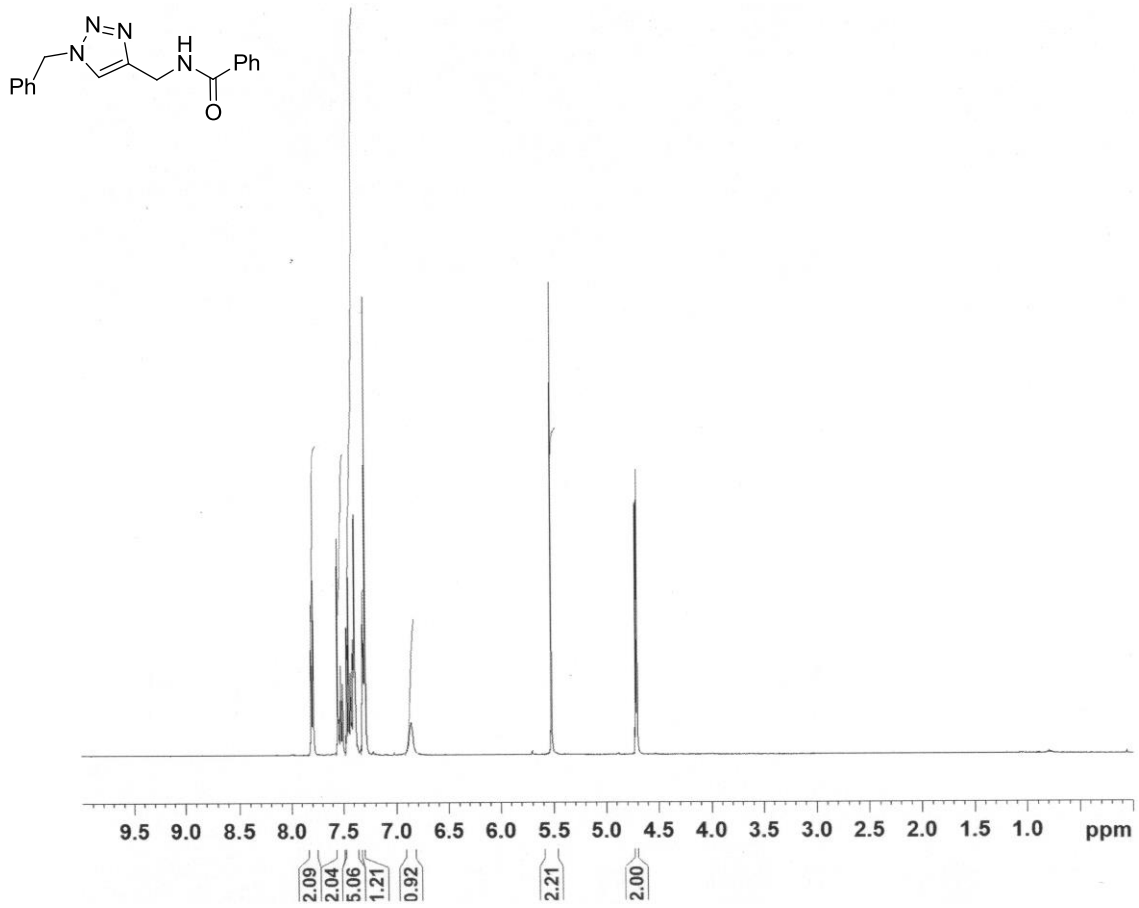
(1-Benzyl-1H-1,2,3-triazol-4-yl)methyl acetate, ***20****,* ^{1}H *NMR in* $CDCl_3$*:*



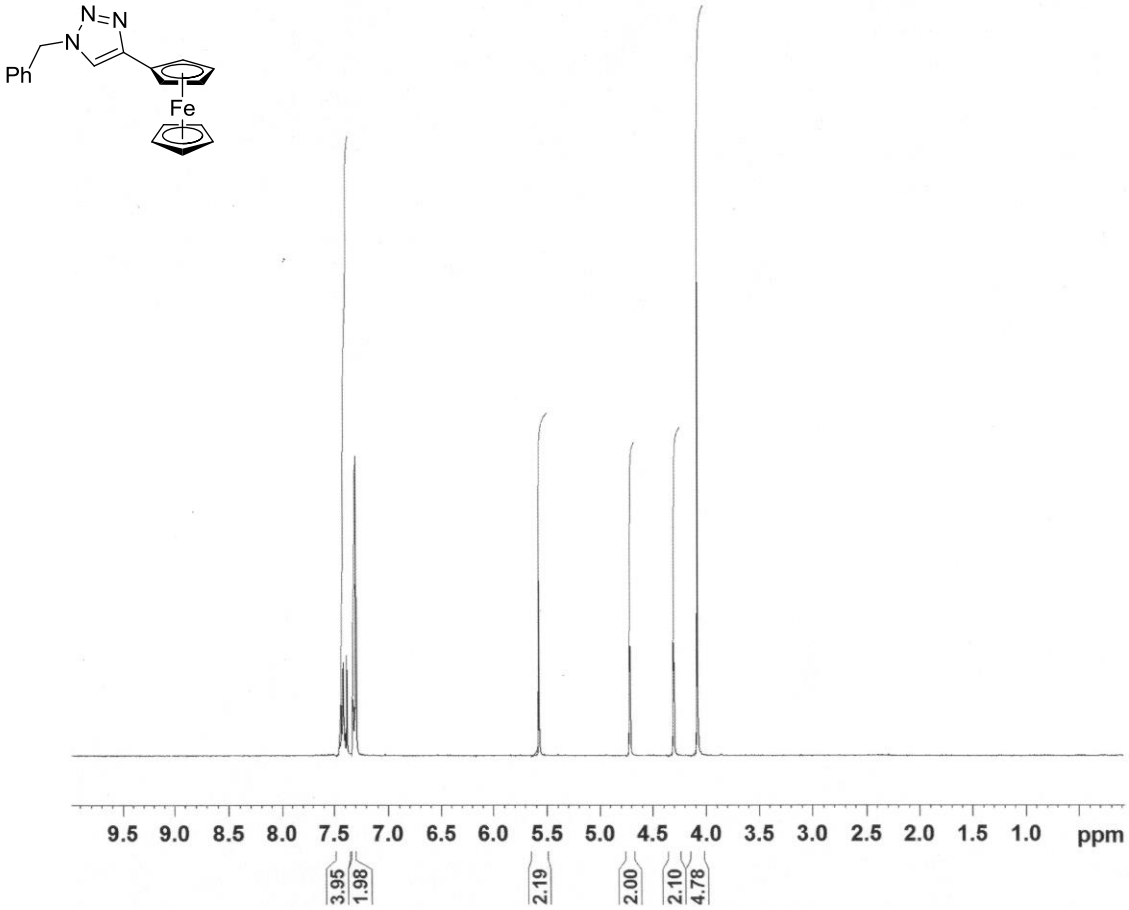
4-(1-Benzyl-1H-1,2,3-triazol-4-yl)butanenitrile, ***21****,* ^{1}*H NMR in* $CDCl_3$*:*



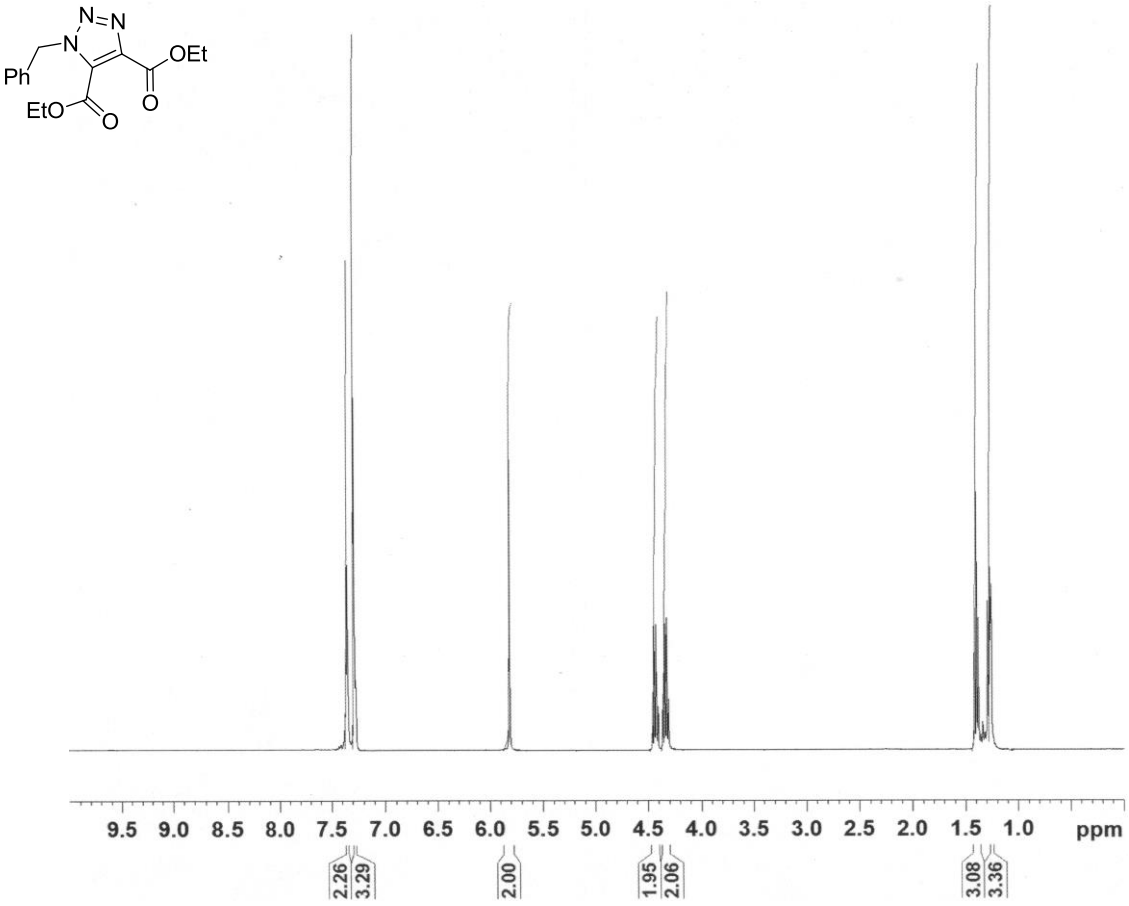
N-((1-benzyl-1H-1,2,3-triazol-4-yl)methyl)benzamide, ***22****,* ^{1}*H NMR in* $CDCl_3$*:*



1-Benzyl-4-ferrocenyl-1H-1,2,3-triazole, ***23****,* ^{1}*H NMR in* $CDCl_3$*:*



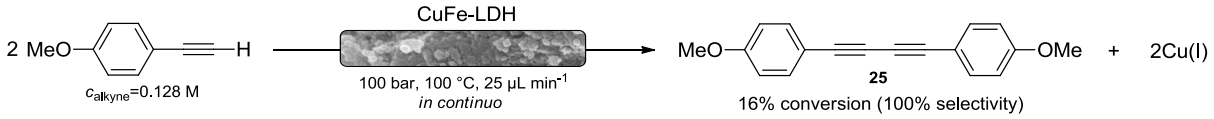
Diethyl 1-benzyl-1H-1,2,3-triazole-4,5-dicarboxylate, ***24****,* ^{1}*H NMR in* $CDCl_3$*:*

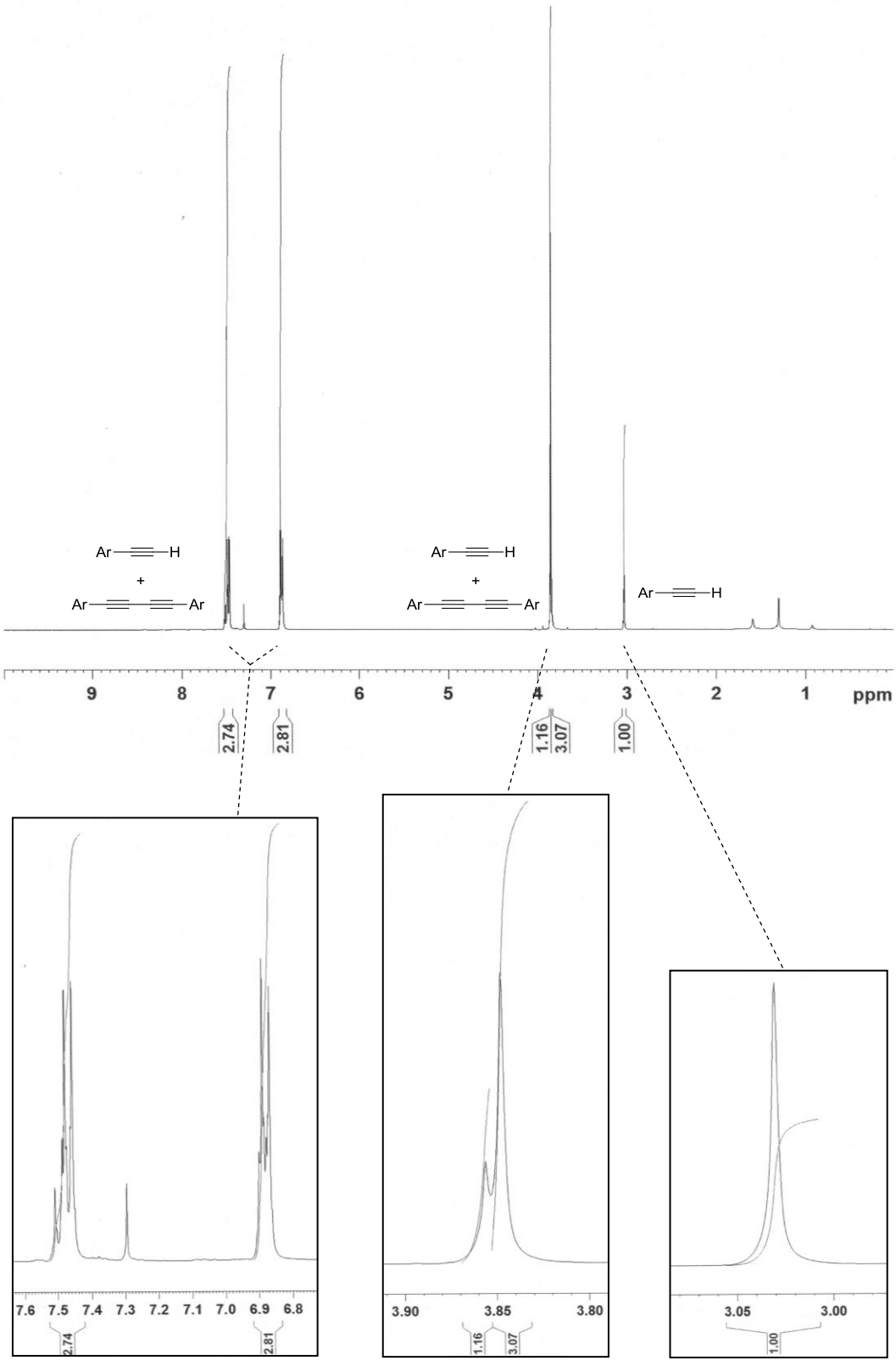


The test reactions to check the efficacy of the individual LDH components ($Cu(NO_3)_2 \cdot 3H_2O$ and $Fe(NO_3)_3 \cdot 9H_2O$) were carried out as follows.

The benzyl azide–phenylacetylene model reaction (1 equiv. azide, 1.5 equiv. alkyne, c_{azide}=0.085 M) was repeated in a flask with 10 mol% of $Cu(NO_3)_2 \cdot 3H_2O$ and then with 10 mol% of $Fe(NO_3)_3 \cdot 9H_2O$ in 5 mL acetonitrile as solvent (the metal salts were not soluble in CH_2Cl_2). After 6 hours of stirring at reflux temperature, the mixture was concentrated under vacuum and was worked up with aqueous NaCl solution and CH_2Cl_2. The combined organic layers were dried over Na_2SO_4 and concentrated under reduced pressure. No traces of triazole products was found according to ^1H NMR measurements with either of the metal salts.

Continuous-flow oxidative homocoupling of 4-ethynylanisole (in CH_2Cl_2 as solvent) mediated by the Cu(II)Fe(III)-LDH (1 g loaded into the catalyst bed, unused portion), and the ^1H NMR spectra of the crude product in $CDCl_3$ with signal assignments.[S15]





The test reactions to check the efficacy of the individual LDH components ($Cu(NO_3)_2 \cdot 3H_2O$ and $Fe(NO_3)_3 \cdot 9H_2O$) were carried out as follows.

The benzyl azide–phenylacetylene model reaction (1 equiv. azide, 1.5 equiv. alkyne, c_{azide}=0.085 M) was repeated in a flask with 10 mol% of $Cu(NO_3)_2 \cdot 3H_2O$ and then with 10 mol% of $Fe(NO_3)_3 \cdot 9H_2O$ in 5 mL acetonitrile as solvent (the metal salts were not soluble in CH_2Cl_2). After 6 hours of stirring at reflux temperature, the mixture was concentrated under vacuum and was worked up with aqueous NaCl solution and CH_2Cl_2. The combined organic layers were dried over Na_2SO_4 and concentrated under reduced pressure. No traces of triazole products was found according to ^1H NMR measurements with either of the metal salts.

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