Supporting Information

A Novel Highly Dispersive Magnetic Nanocatalyst In Water: Glucose as Efficient and Green Ligand for Immobilization of Copper(II) for Cycloaddition of Alkynes to Azides

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CONTENTS

1. *General remarks*

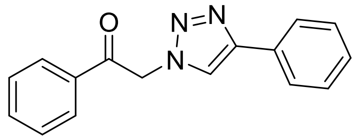
All chemicals were purchased from Merck and used without any additional purification. ^{1}H NMR and ^{13}C NMR spectra were recorded on a Bruker (Avance DRX-500) spectrometer using $CDCl_3$ as solvent at room temperature. Chemical shifts δ were reported in ppm relative to tetramethylsilane as an internal standard. FTIR spectra of samples were taken using an ABB Bomem MB-100 FTIR spectrophotometer. The structures of the prepared materials were observed using a Philips XL30 scanning electron microscope (SEM), thermo gravimetric analysis (TGA) was acquired under a nitrogen atmosphere with a TGA Q 50 thermo gravimetric analyzer. CHN analysis was done by LECO Truspec.

2. *General procedure for the synthesis of triazole*

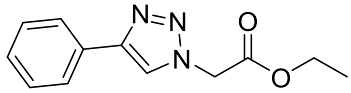
A glass tube was charged with sodium ascorbate (30 mg, 10 mol%), phenyl acetylene (0.5mmol), benzyl bromide (0.5 mmol), sodium azide (0.5 mmol), catalyst (5 mg, 0.5 mol%) and H2O (3 mL). The reaction mixture was stirred at 50 ˚C for 1 h and the completion of the reaction was monitored by TLC (EtOAC/ n-hexane, 25:75). In each case, after completion, the product was worked up and purified according to the following procedure: The mixture was diluted with ethyl acetate and water. The organic layer was washed with brine, dried over MgSO4 and concentrated under reduced pressure using a rotary evaporator. The residue was purified by recrystallization from ethyl acetate/ n-hexane. In order to reuse the catalyst, the nanomagnetic Cu catalyst was collected using an external magnet, washed with methanol and dried overnight to be ready for the next run

Spectroscopic characterization of the products

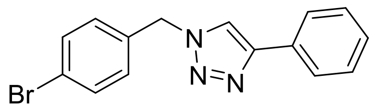
1-Phenyl-2-(4-phenyl-1*H*-1,2,3-triazol-1-yl)ethanone[1]:
Colourless solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ= 5.93 (s, 2H), 7.36-7.90 (m, 6H), 8.01 (d, *J* = 7.2 Hz, 2H); 8.04 (s, 1H); 8.06 (d, *J* = 7.2 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 55.4, 121.4, 125.8, 128.2, 128.8, 129.2, 130.5, 133.9, 134.6, 148.2, 190.2



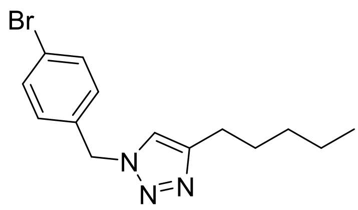
4-Phenyl-(1,2,3-triazole-1-yl)-acetic acid ethyl ester:
^{1}H NMR (400 MHz, $CDCl_3$) δ= 1.33 (3H, t, *J* =7.6 Hz), 4.26 (2H, q, *J* =7.6 Hz), 5.20 (2H, s), 7.34-7.46 (3H, m), 7.85-7.87 (2H, m, ortho to Ar), 7.93 (1H, s);
^{13}C NMR (100MHz, $CDCl_3$) δ = 14.0, 50.9, 62.4, 121.0, 125.8, 128.3, 128.8, 130.3, 148.2, 166.3;



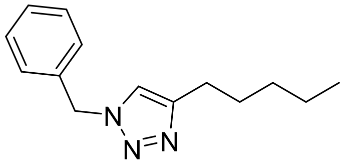
1-(4-bromobenzyl)-4-phenyl-1*H*-1,2,3-triazole[1]:
^{1}H NMR (400 MHz, $CDCl_3$) δ = 5.69 (2H, s), 7.31-7.36 (1H, m), 7.40-7.44 (4H, m), 7.76 (s, 1 H), 7.81 (2H, d, *J* = 6.8 Hz), 8.22 (2H, d, *J* = 6.8Hz,); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 53.1, 119.7, 124.0, 124.2, 125.7, 128.4, 128.5, 128.8, 130. 0, 141.7, 148.0, 148.6



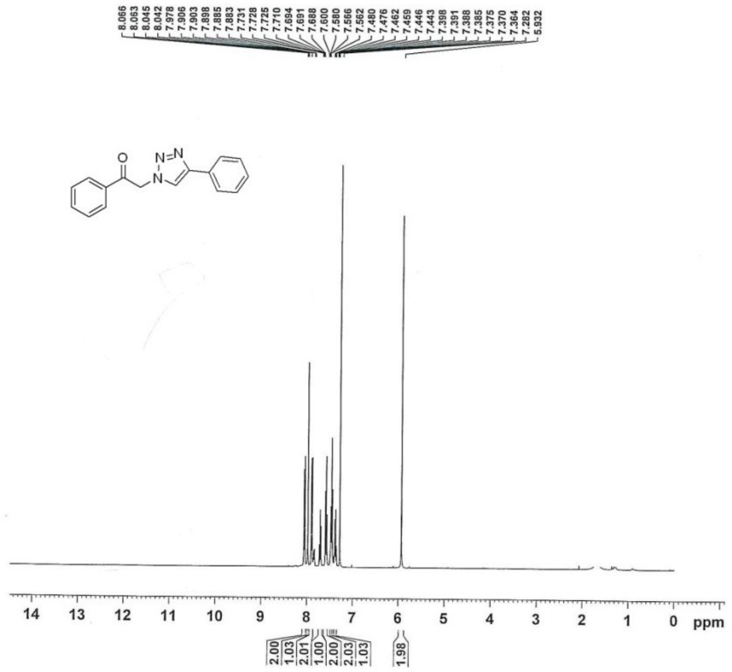
1-(4-bromobenzyl)-4-pentyl-1*H*-1,2,3-triazole:
^{1}H NMR (400 MHz, $CDCl_3$) δ = 0.85 (3H, t, *J* = 6.9 Hz), 1.27-1.30 (4 H, m), 1.59-1.63 (2H, m), 2.65 (2H, t, *J* = 7.4 Hz), 5.41 (2H, s), 7.09 (2H, d, *J* = 6.3 Hz,), 7.21 (1H, s), 7.46 (2H, d, *J* = 6.3 Hz); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 13.9, 22.3, 25.6, 29.0, 13.9, 22.3, 25.6, 29.0, 31.4, 53.2, 120.5, 122.6, 129.5, 132.1, 134.0

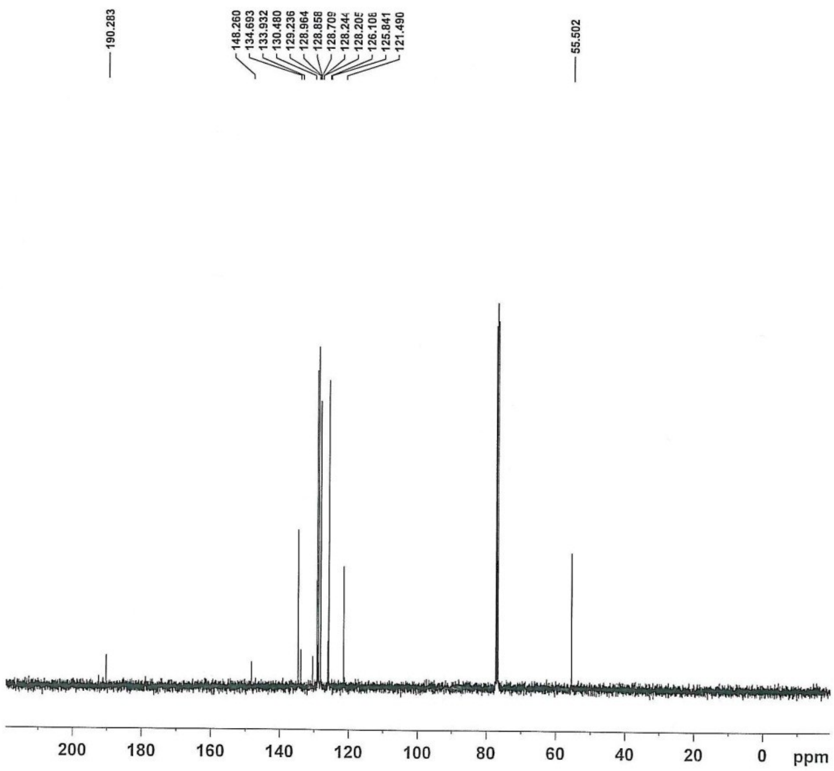


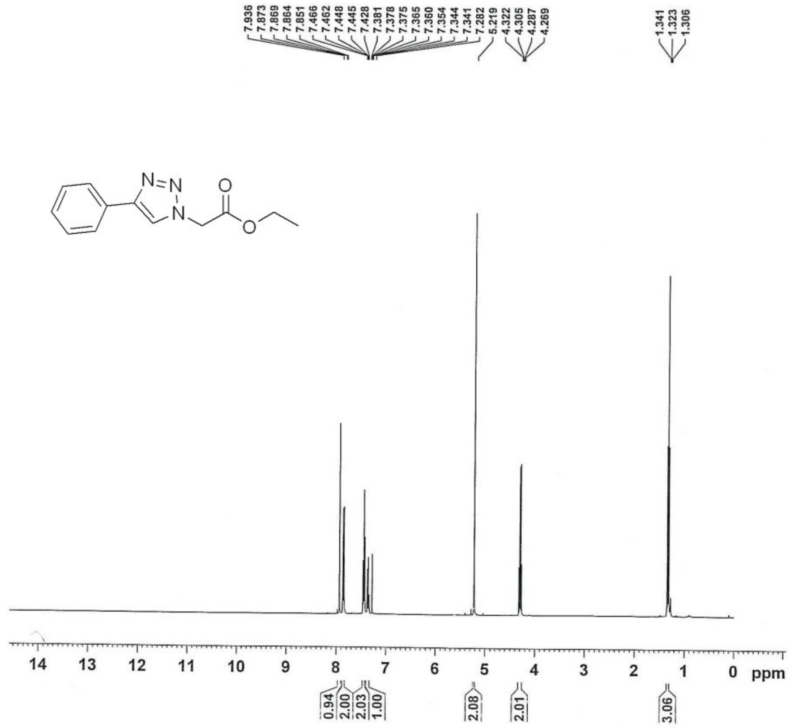
1-Benzyl-4-pentyl-1*H*-1,2,3-triazole[2]:
^{1}H NMR (400 MHz, $CDCl_3$) δ = 0.87 (3H, t, *J* = 6.9 Hz), 1.29-1.33 (4H, m), 1.61-1.65 (2H, m), 2.67 (2H, t, *J* = 7.4 Hz), 5.49 (2H, s), 7.17 (1H, s), 7.25 (2H, d, *J* = 8.0 Hz), 7.34-7.38 (3H, m,); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 13.9, 22.3, 25.6, 29.0, 31.4, 53.9, 120.4, 127.9, 128.5, 129.0, 135.0, 148.9



^{1}H-NMR and ^{13}C-NMR spectra of the products



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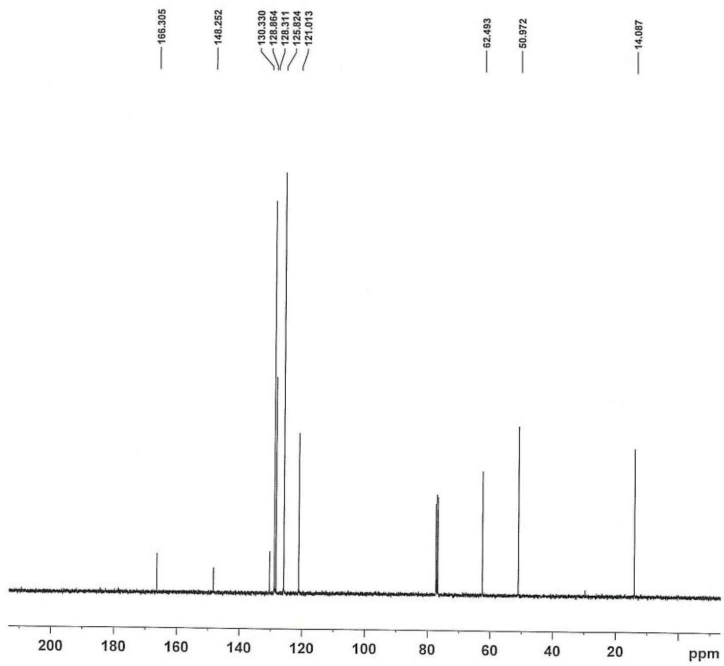
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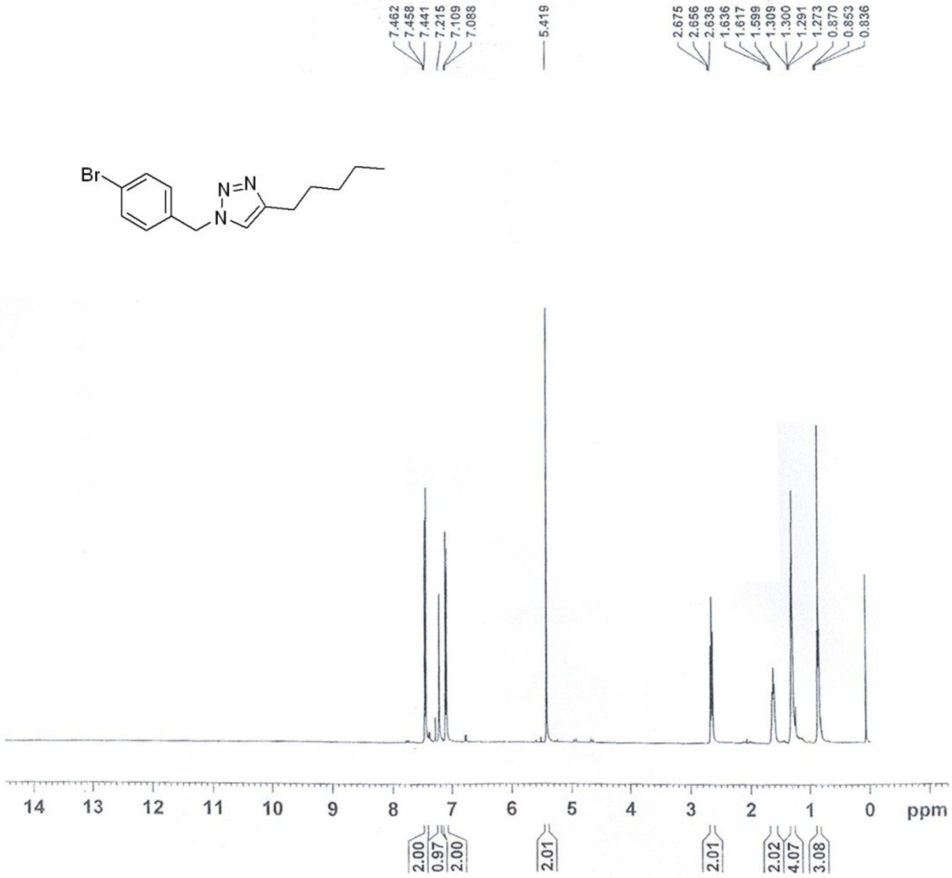
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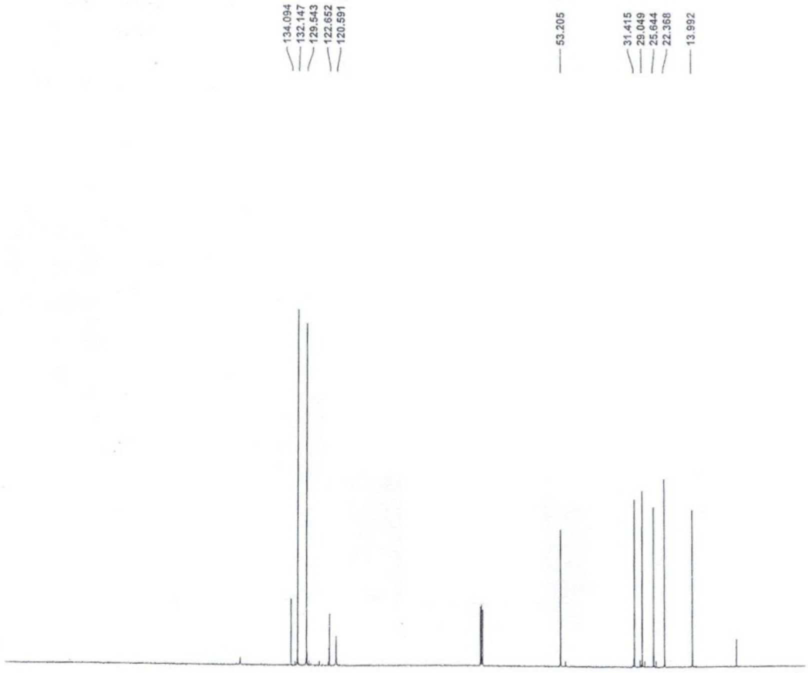
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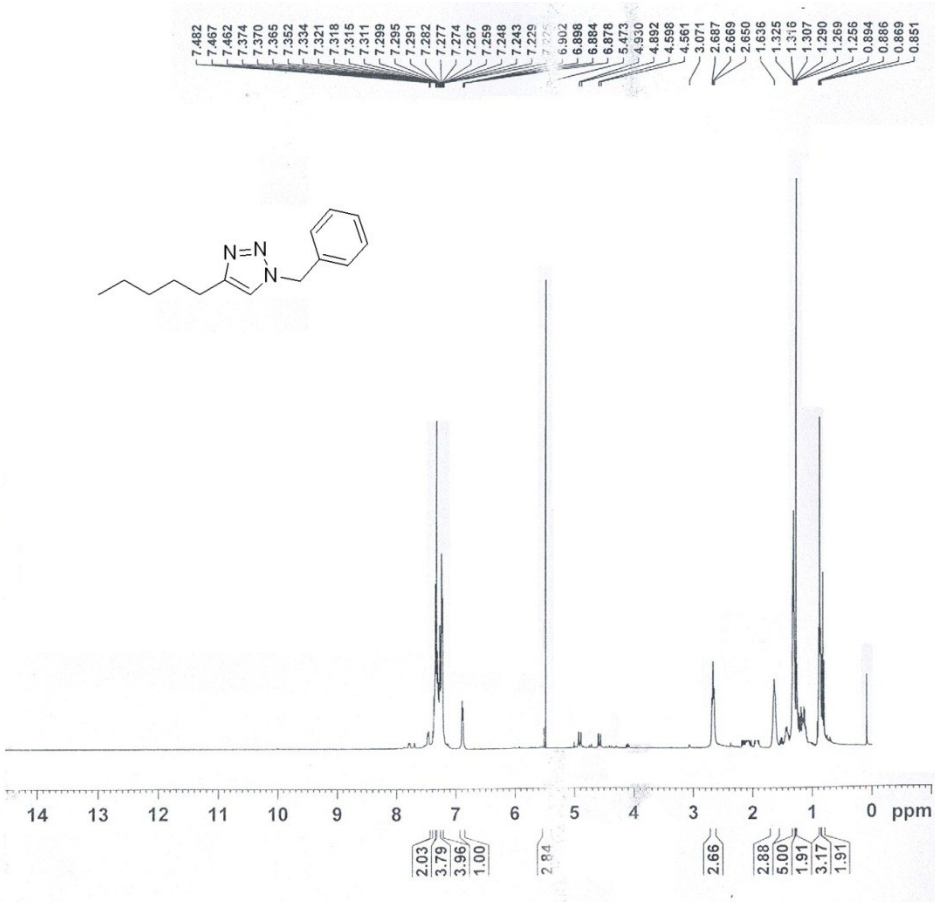

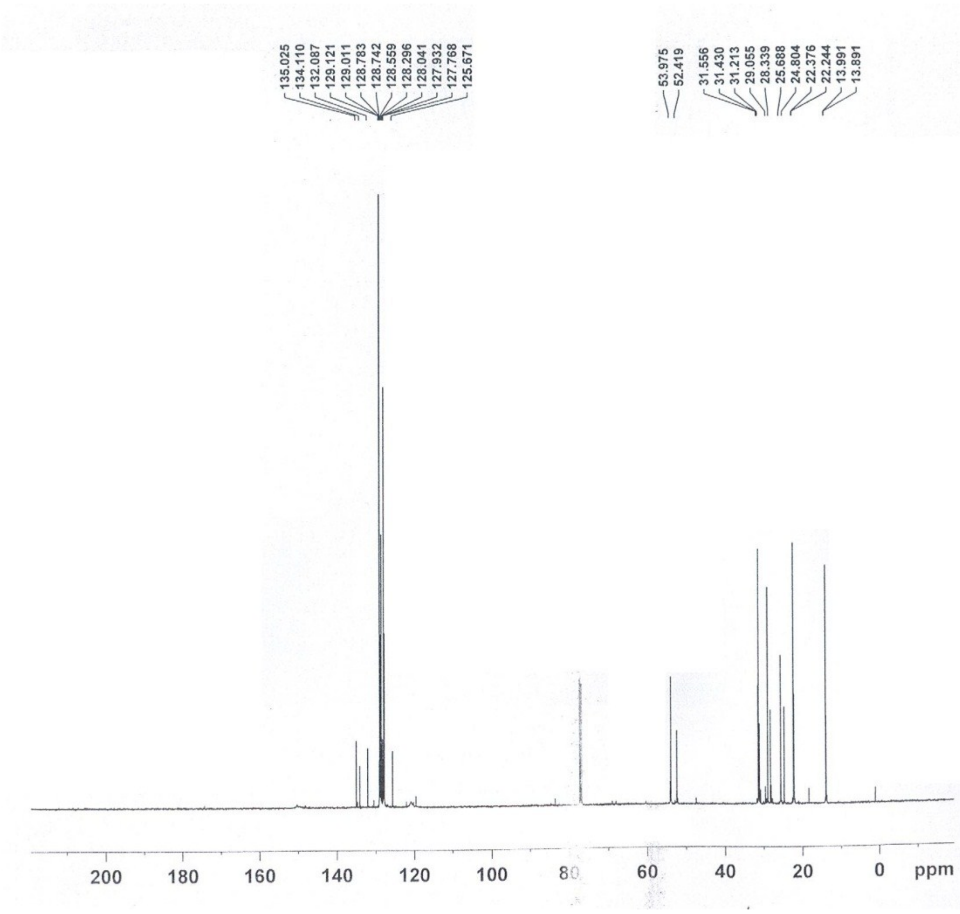

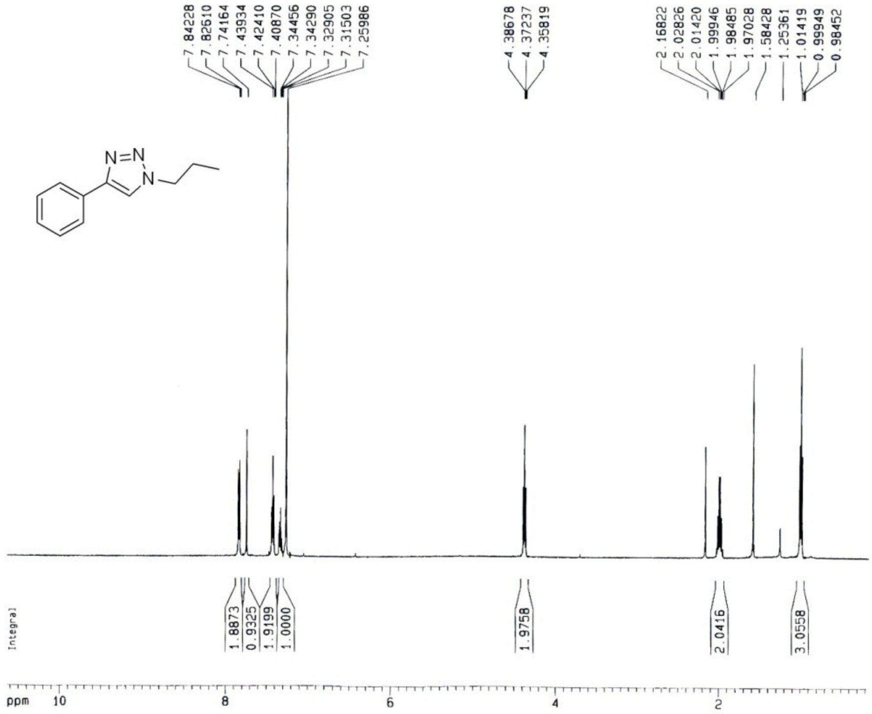

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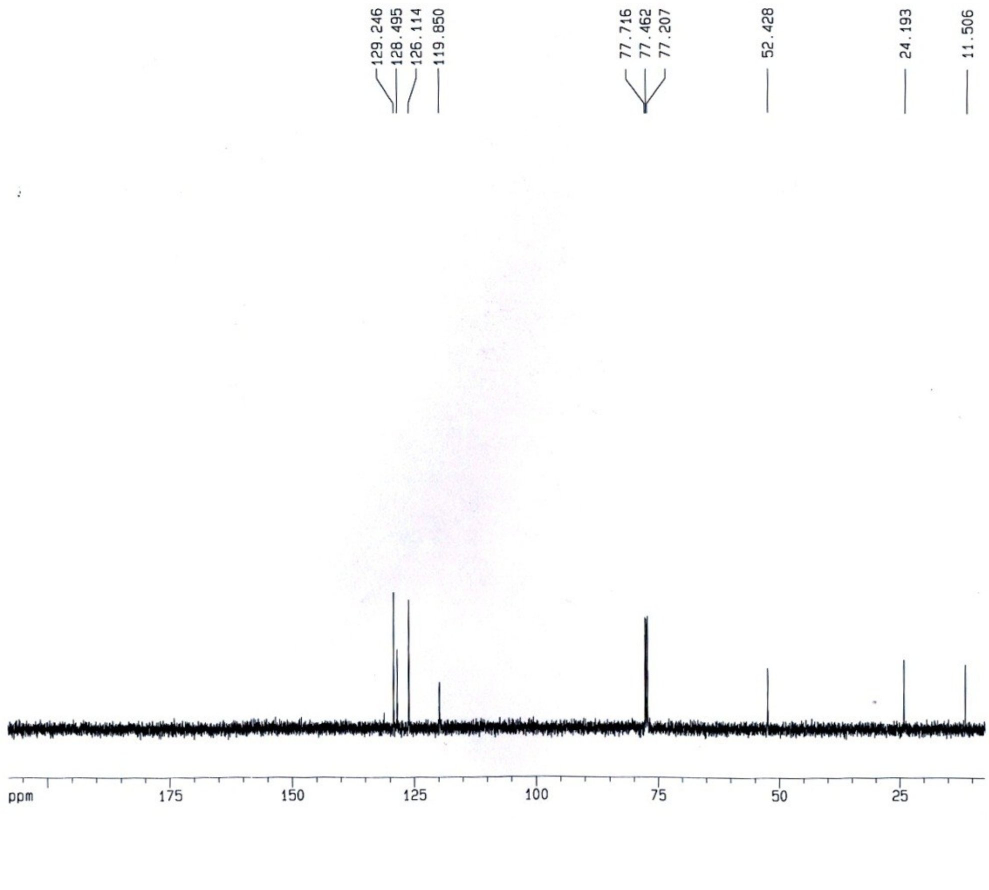

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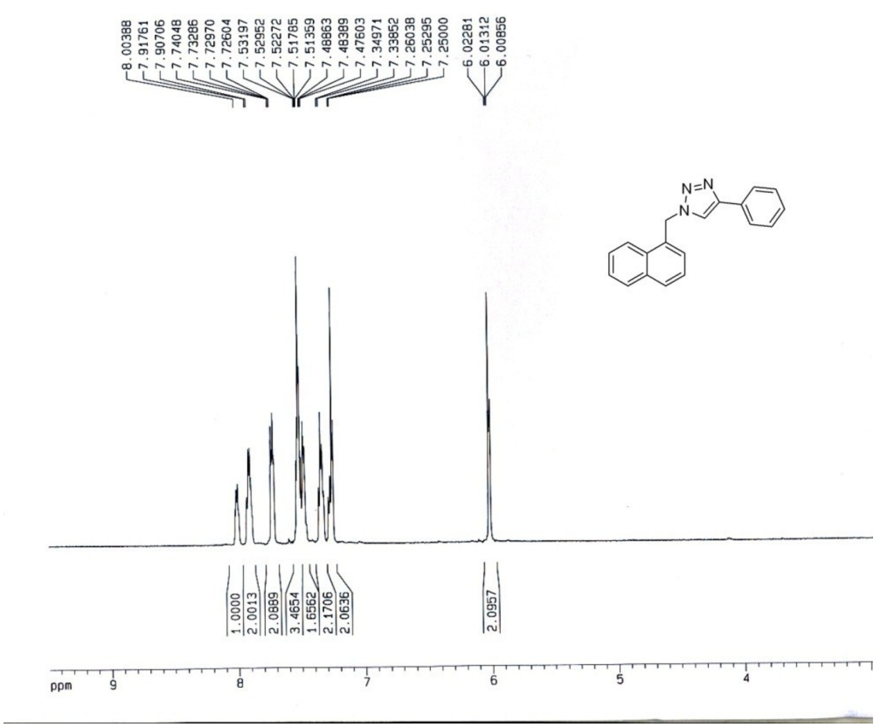
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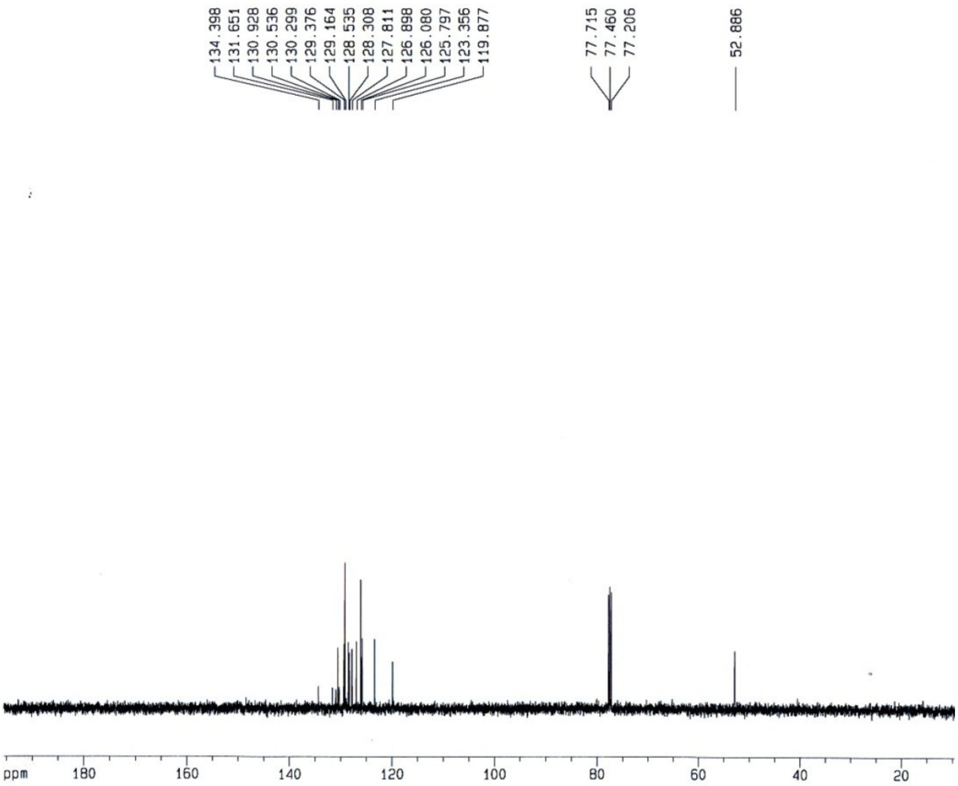
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