

Supplementary Data

Copper loaded onto the polymeric magnetic nanocatalyst a retrievable and robust heterogeneous catalyst for click reaction

Ali Pourjavadi^{*a}, Mahmood Tajbakhsh,^{b*} Maryam Farhang,^b Seyed Hassan Hosseini,^a

^b *Polymer Research Laboratory, Department of Chemistry, Sharif University of Technology, Tehran, Iran*

^a *Organic Chemistry Laboratory, Faculty of Chemistry, University of Mazandaran, Babolsar, 47415, Iran*

E-mail address: Tajbakhsh@ac.ir; Phone/fax: (982)166165311

E-mail address: purjavad@sharif.edu; Phone/fax: (982)166165311

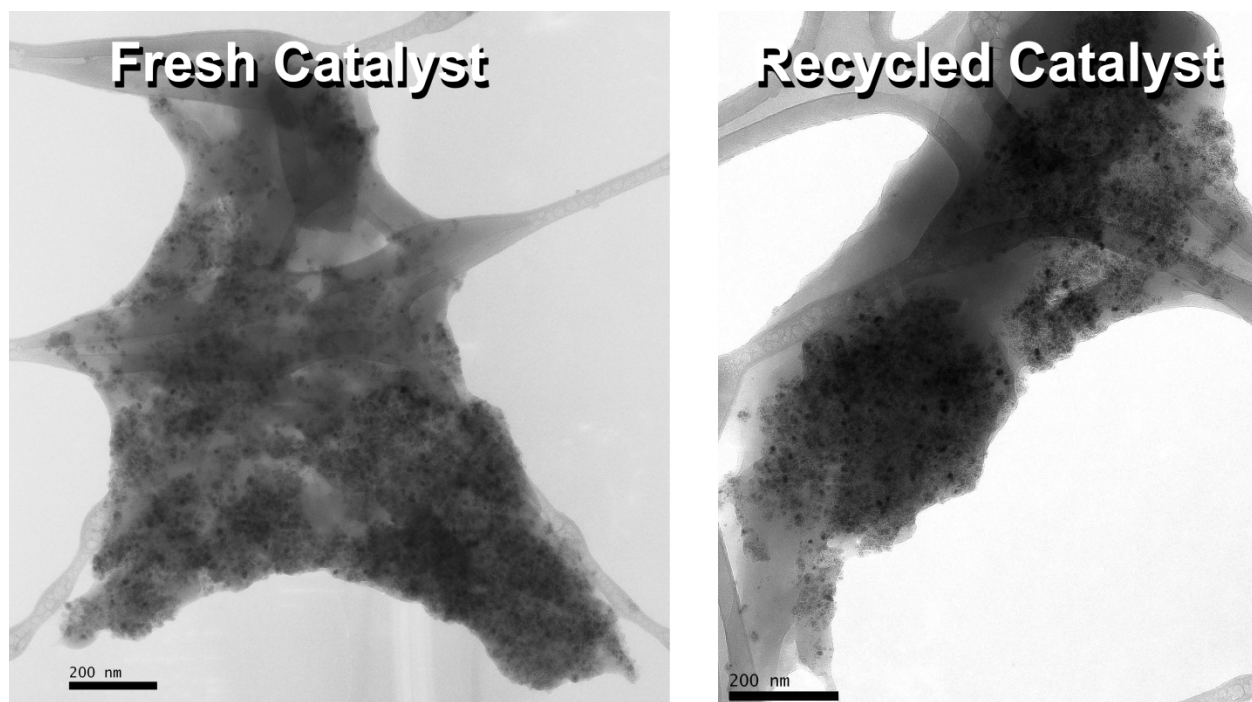


Fig. S1. TEM image of fresh and recycled catalyst

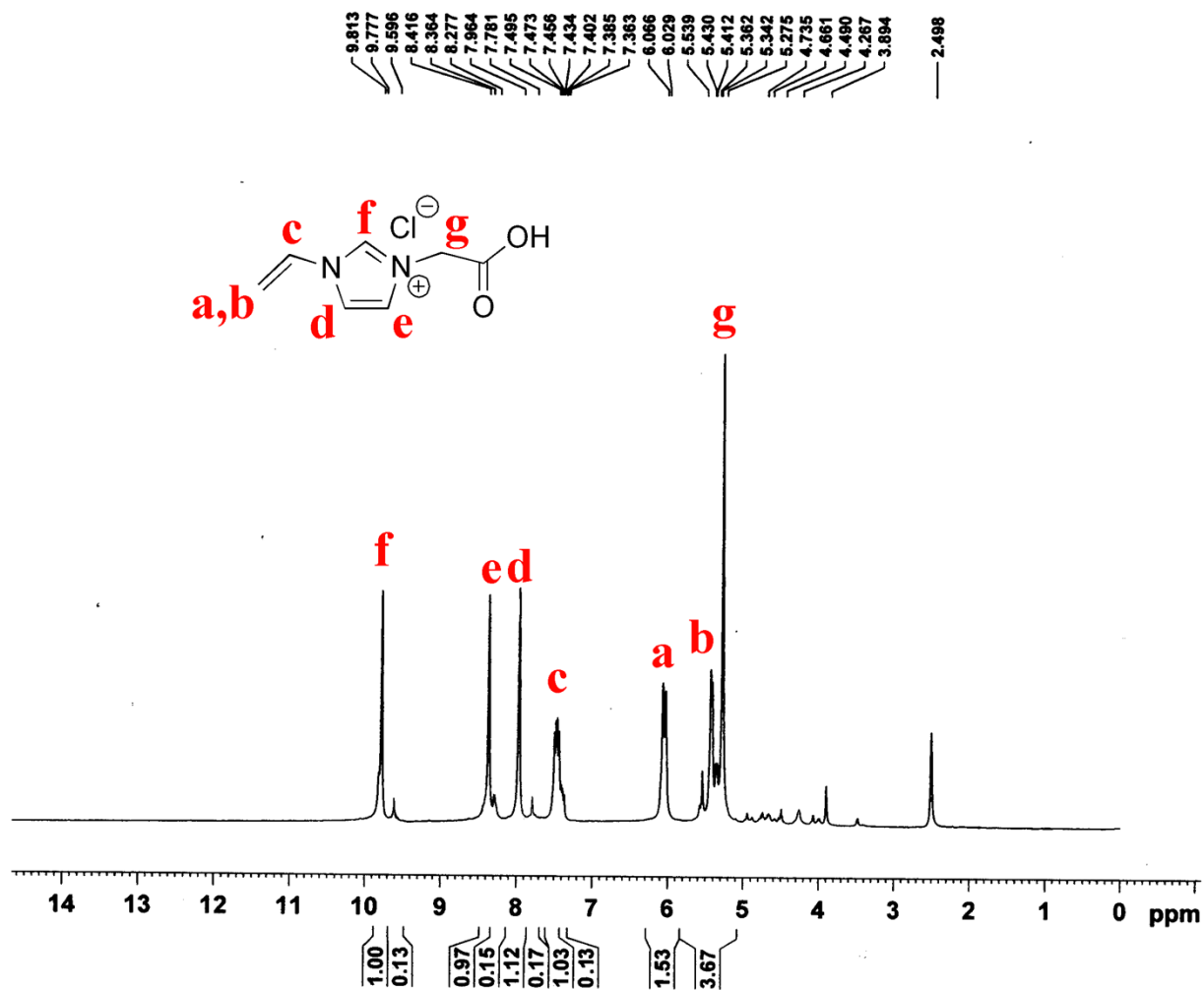


Fig. S2. ^1H NMR of VimAc monomer

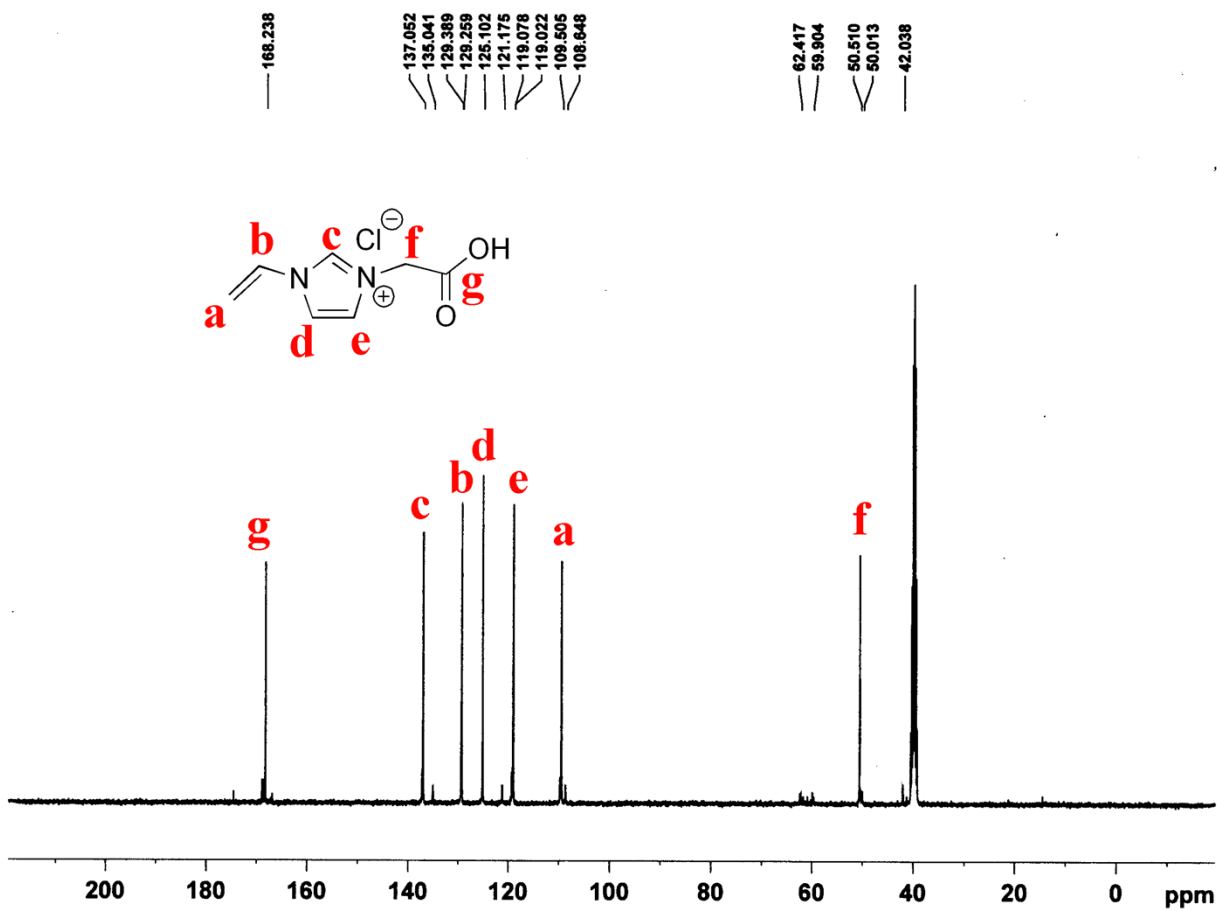


Fig. S3. ^{13}C NMR of VimAc monomer

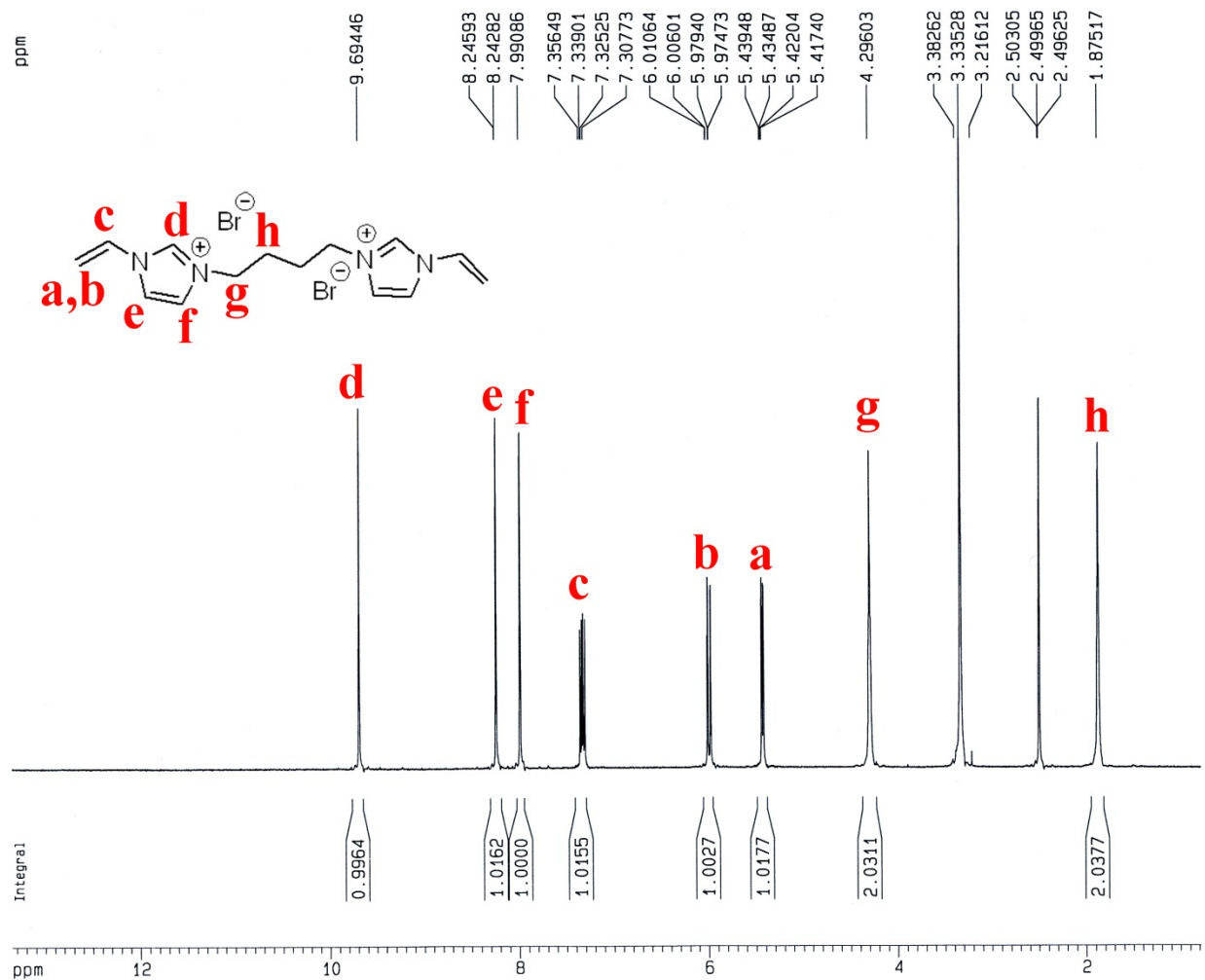
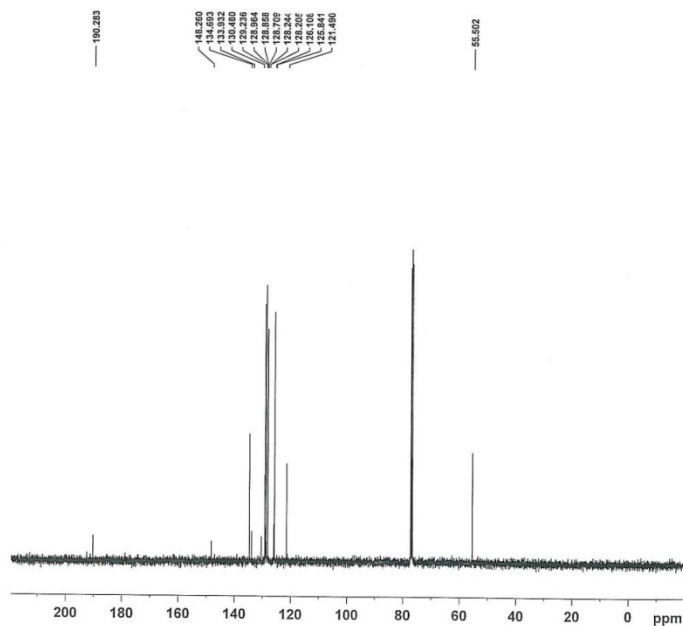
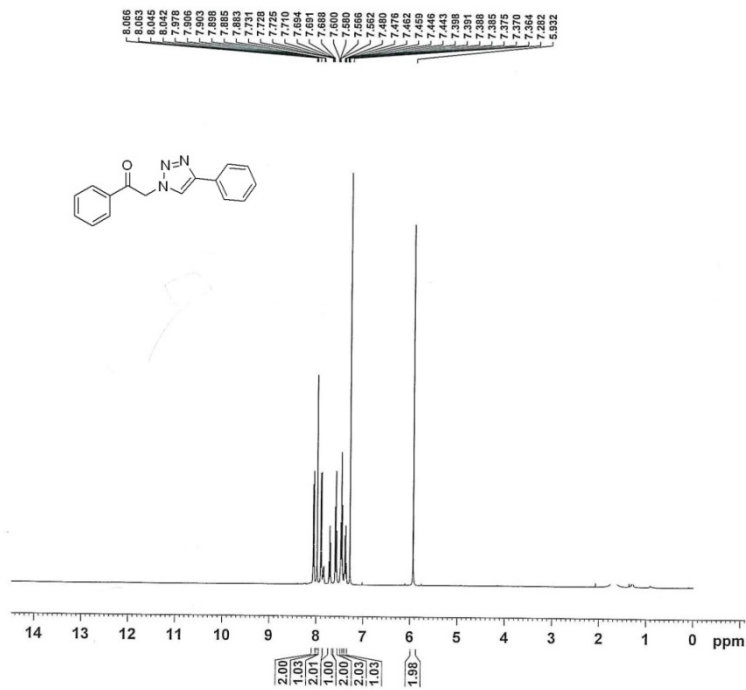


Fig. S4. ^1H NMR of 1,4-butanediyl-3,3'-bis-1-vinylimidazolium dibromide

1-Phenyl-2-(4-phenyl-1H-1,2,3-triazol-1-yl)ethanone:

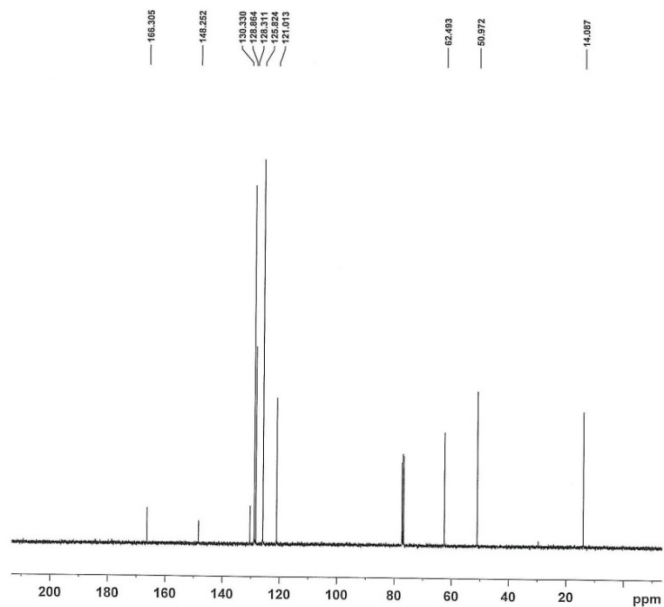
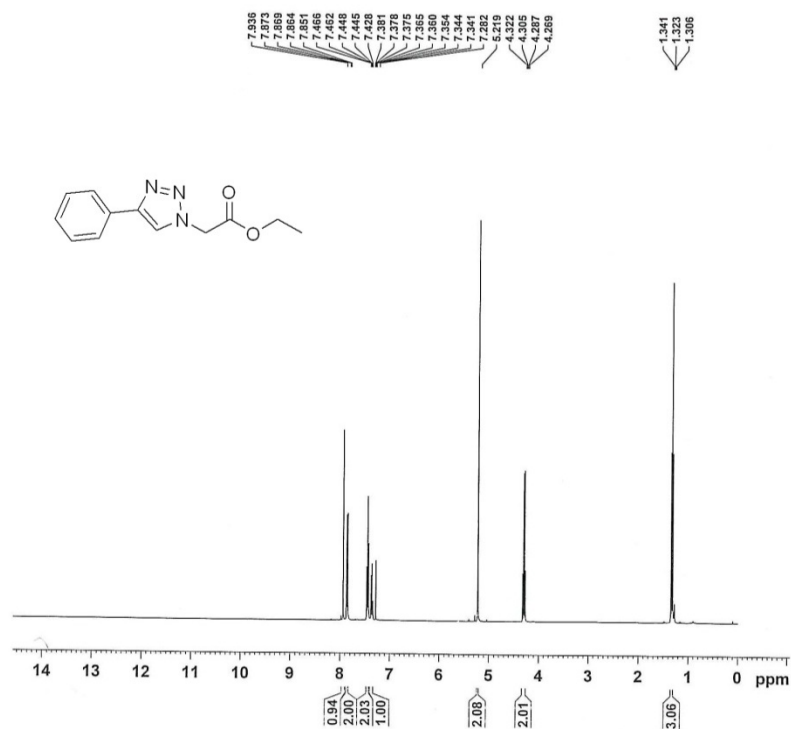
Colourless solid; ^1H NMR (400 MHz, CDCl_3) δ 5.93 (s, 2H), 7.36-7.90 (m, 6H), 8.01 (d, $J = 7.2$ Hz, 2H); 8.04 (s, 1H); 8.06 (d, $J = 7.2$ Hz, 2H); ^{13}C NMR (100 MHz, CDCl_3) δ 55.4, 121.4, 125.8, 128.2, 128.8, 129.2, 130.5, 133.9, 134.6, 148.2, 190.2



4-Phenyl-1,2,3-triazole-1-yl)-acetic acid ethyl ester:

^1H 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;

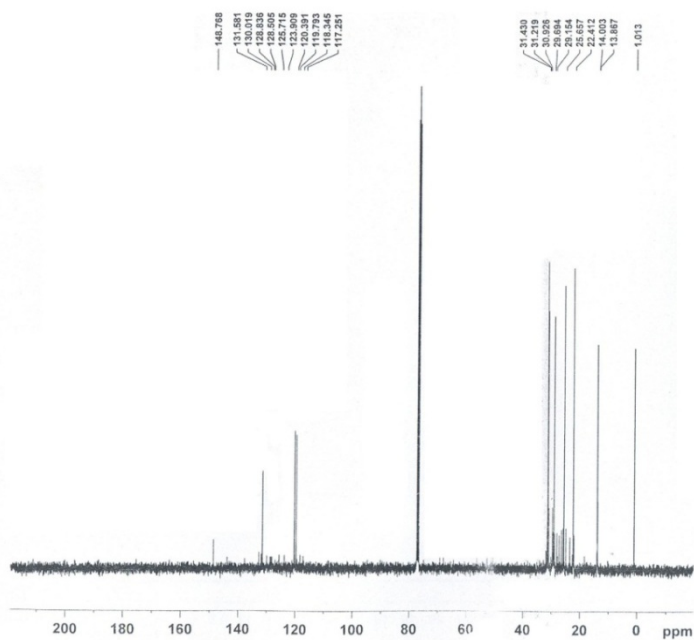
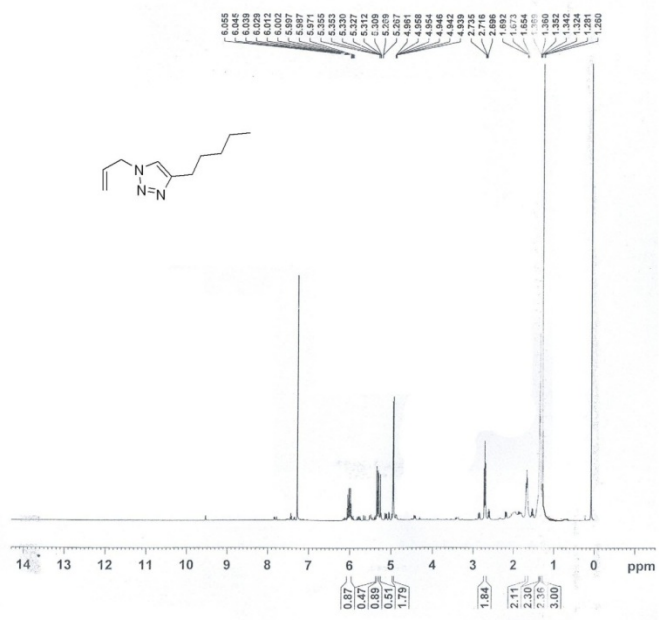


¹H NMR (400 MHz, CDCl₃) δ = 5.69 (2H, s), 7.31-7.36 (1H, m), 7.40-7.44 (4H, m), 7.76 (s, 1 H), 7.81 (2H, d, *J* = 6.8 Hz), 8.22 (2H, d, *J* = 6.8Hz); ¹³C NMR (100 MHz, CDCl₃) 53.1, 119.7, 124.0, 124.2, 125.7, 128.4, 128.5, 128.8, 130.0, 141.7, 148.0, 148.6;



1-allyl-4-pentyl-1H-1,2,3-triazole:

^1H NMR (400 MHz, CDCl_3) δ = 1.28 (3H, t), 1.32-1.37 (2H, m), 1.35-1.36 (4H, m), 1.67 (2H, t), 2.27 (2H, t), 4.92 (2H, d), 5.26-5.36 (2H, m), 5.97-6.05 (1H, m), 7.46 (1H, s); ^{13}C NMR (100 MHz, CDCl_3) : 13.8, 22.4, 25.6, 29.6, 30.9, 31.4, 119.7, 120.4, 130.0, 148.7

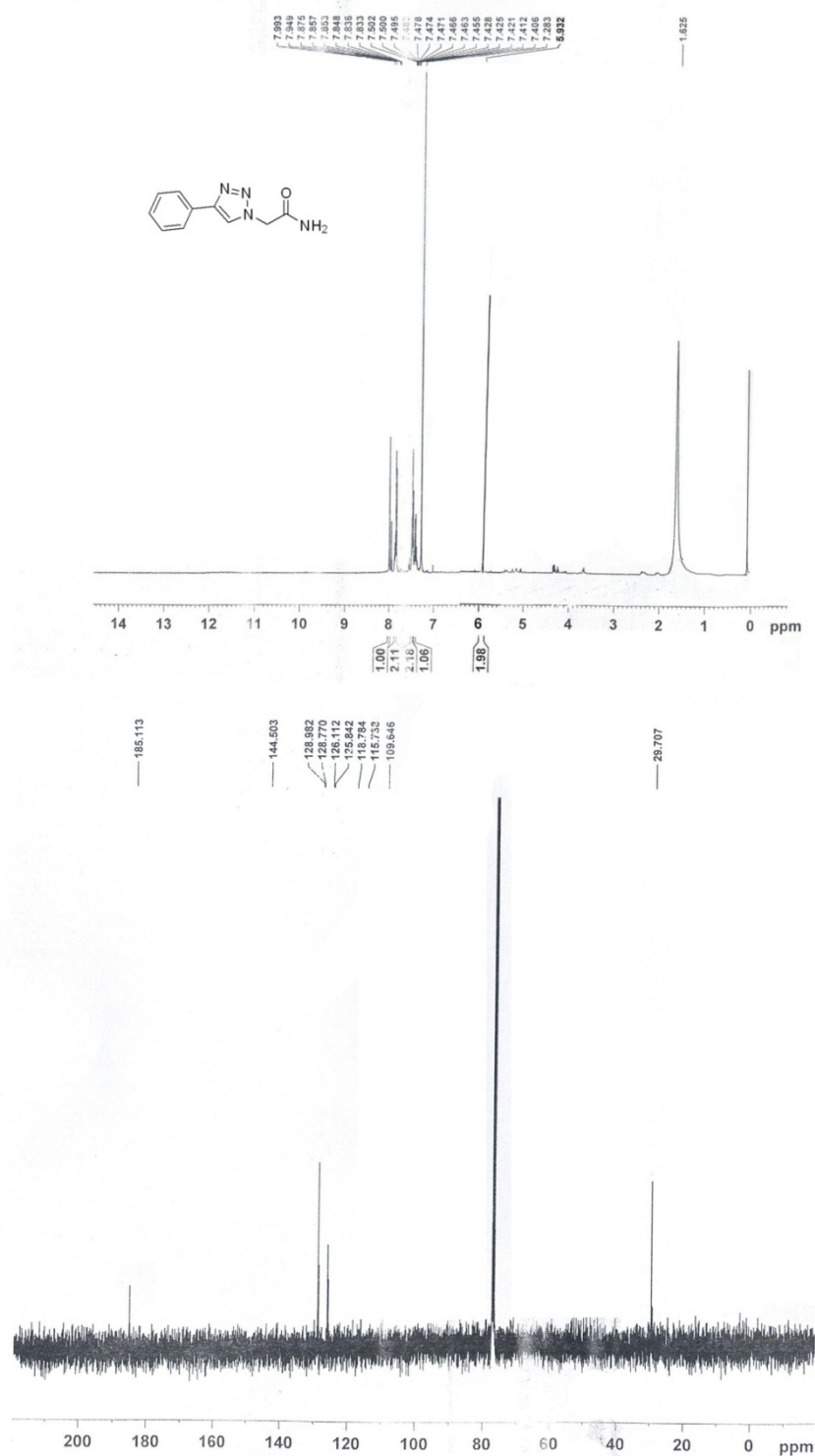


4-Phenyl-1,2,3-triazole-1-yl)-acetic acid ethyl ester:

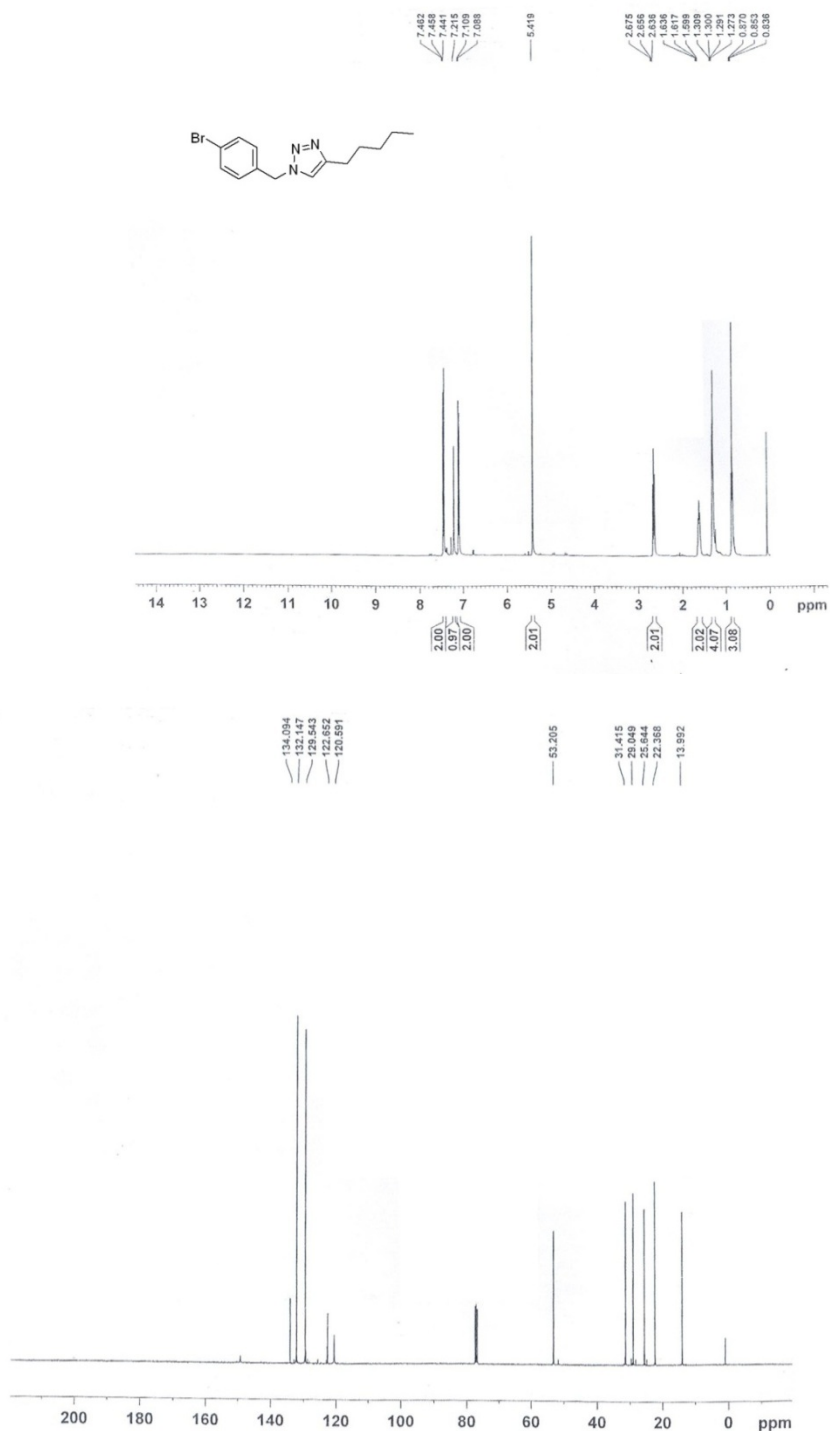
White solid, mp 102-104°C;

^1H NMR (400 MHz, CDCl_3) δ : 1.62 (2H, broad), 5.93 (2H, s), 7.28 (1H, s), 7.40-7.40 (2H, m), 7.83-7.99 (3H, m, ortho to Ar)

^{13}C NMR (100 MHz, CDCl_3) δ : 29.70, 109.64, 115.73, 118.78, 126.11, 128.98, 144.50, 185.11;

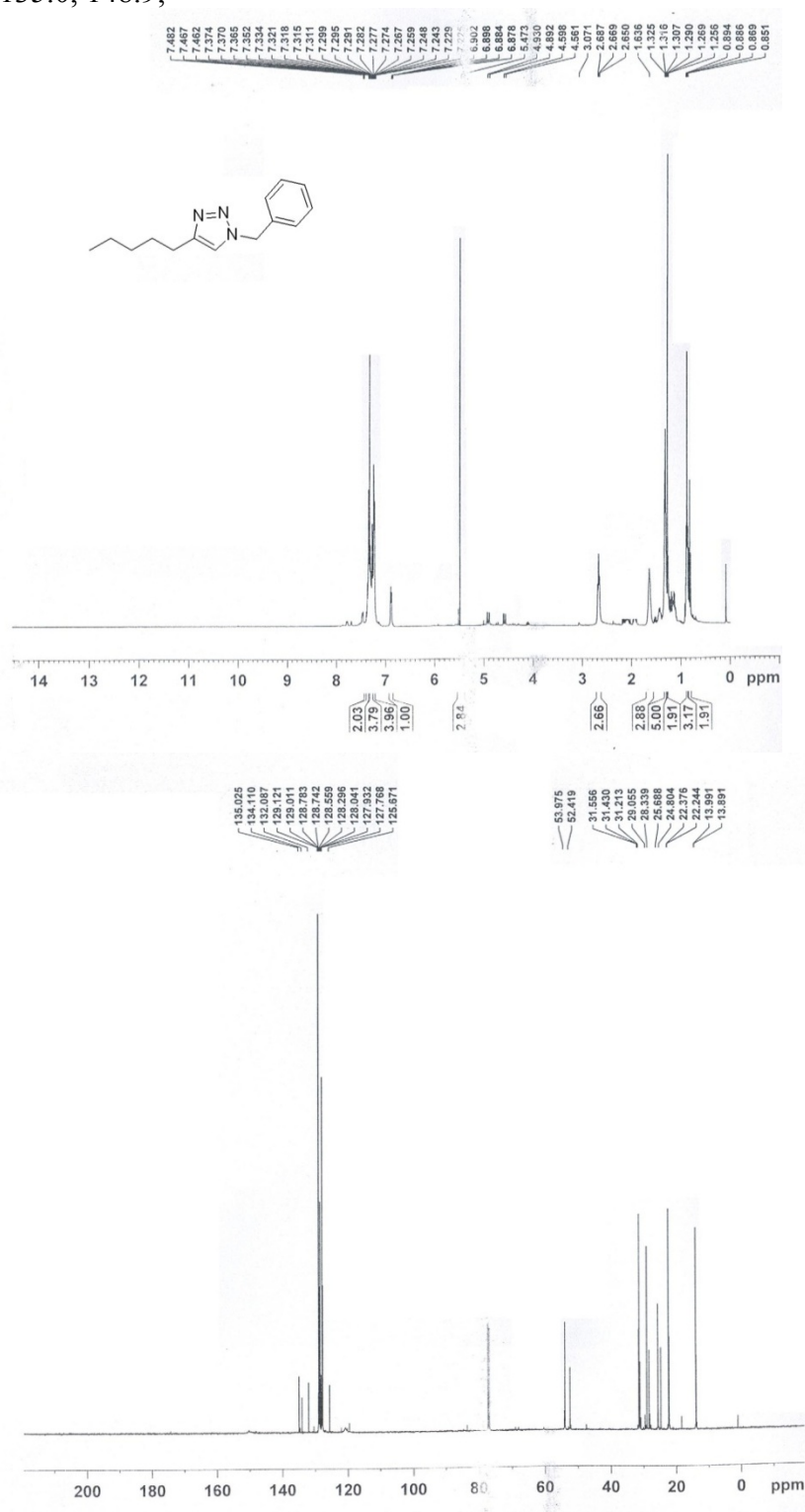


1-Benzyl-4-pentyl-1*H*-1,2,3-triazole: ^1H NMR (400 MHz, CDCl_3) δ = 0.85 (3H, t, J = 6.9 Hz), 1.27-1.30 (4 H, m), 1.59-1.63 (2H, m), 2.65 (2H, t, J = 7.4 Hz), 5.41 (2H, s), 7.09 (2H, d, J = 6.3 Hz), 7.21 (1H, s), 7.46 (2H, d, J = 6.3 Hz); ^{13}C NMR (100 MHz, CDCl_3) 13.9, 22.3, 25.6, 29.0, 13.9, 22.3,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



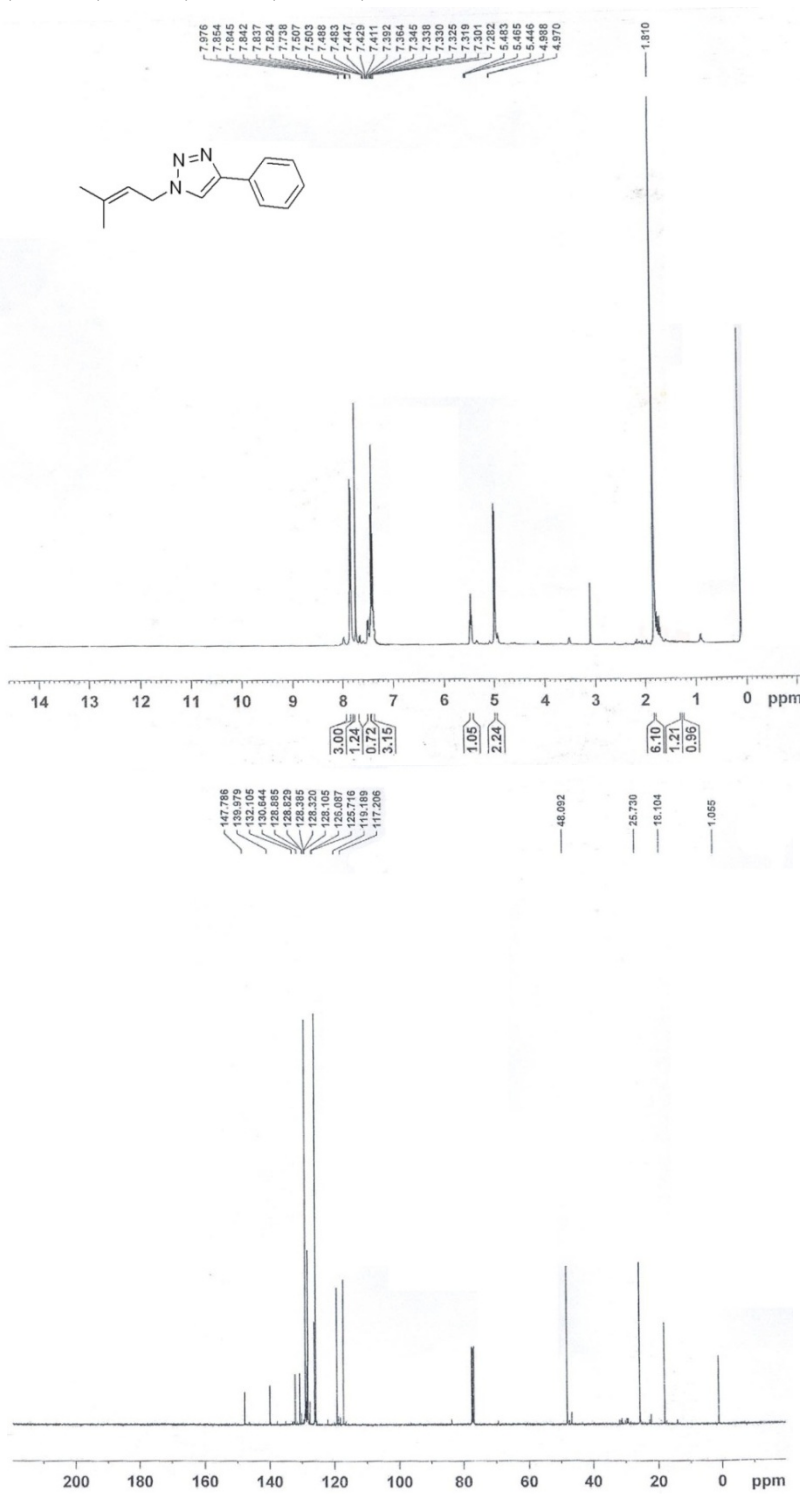
1-Benzyl-4-pentyl-1*H*-1,2,3-triazole:

^1H 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) 13.9, 22.3, 25.6, 29.0, 31.4, 53.9, 120.4, 127.9, 128.5, 129.0, 135.0, 148.9;



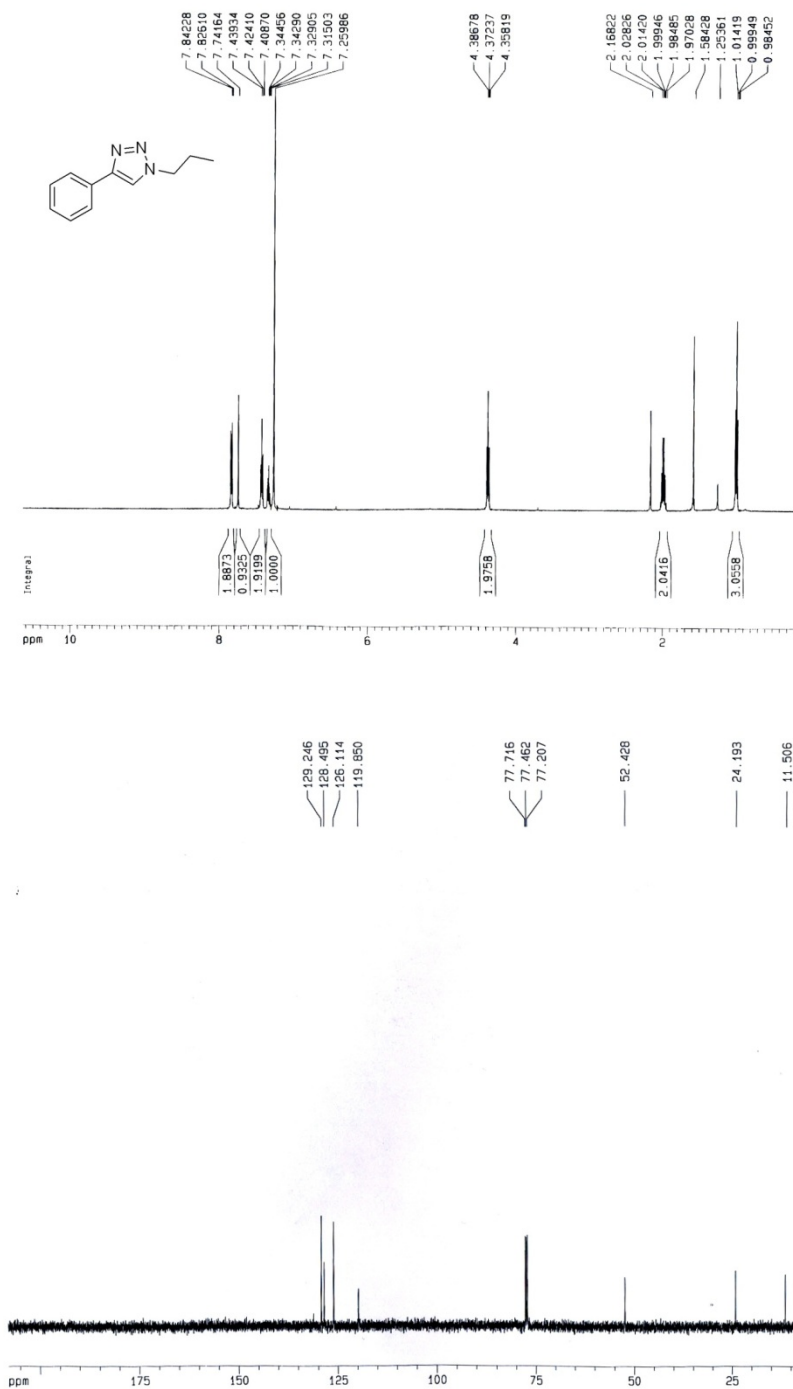
1-(3-methylbut-2-en-1-yl)-4-phenyl-1H-1,2,3-triazole:

^1H NMR (400 MHz, CDCl_3) δ = 1.81(6H, s), 4.97 (2H, d, J = 7.2Hz), 5.46 (1H, t, J = 7.2Hz), 7.28-7.36 (3H, m), 7.73 (1H, s), 7.82-7.85 (2H,m); ^{13}C NMR (100 MHz, CDCl_3) 18.1, 25.7, 48.1, 117.2, 119.2, 126.7, 128.1, 128.8, 139.9, 147.7



1-propyl-4-phenyl-1H-1.2.3-triazole:

White solid, mp 62-64°C, ^1H NMR (400 MHz, CDCl_3) δ : 0.99 (3H, t, $J=7.3$), 1.97-2.02 (2H, m), 4.37 (2H, t, $J=7.3$), 7.26-7.34 (1H, m, Ar), 7.42 (2H, t, Ar), 7.74 (1H, s), 7.83 (2H, d); ^{13}C NMR (100 MHz, CDCl_3) δ : 11.5, 24.1, 51.9, 119.8, 126.1, 128.5, 129.2, 130.70, 147.61



1-(naphthalen-1-ylmethyl)-4-phenyl-1H-1,2,3-triazole: ^1H NMR (400 MHz, CDCl_3) δ = 6.02 (2H, s), 7.25-7.26 (2H, m), 7.33-7.34 (2H, m), 7.47-7.53 (4H, m), 7.72-7.74 (2H, m), 7.90 (2H, d, J = 5.2), 8.00 (1H, d, J = 5.2); ^{13}C NMR (100 MHz, CDCl_3) 52.8, 119.8, 123.3, 125.7, 126.0, 126.8, 127.8, 128.3, 128.5, 129.1, 129.3, 130.2, 130.5, 130.9, 131.6, 134.3

