Electronic Supplementary Material (ESI) for RSC Advances.
This journal is © The Royal Society of Chemistry 2015

Electronic Supplementary Information

Ethylenediamine-functionalized Magnetic Fe_3O_4@SiO_2 Nanoparticles: cooperative trifunctional catalysis for selective synthesis of nitroalkenes

Fengjun Xue,[ab] Yahao Dong,[ab] Peibo Hu,[ab] Yanan Deng[ab] and Yuping Wei*[ab]

[a]Department of Chemistry, School of Science, Tianjin University, Tianjin 300072, P.R.China

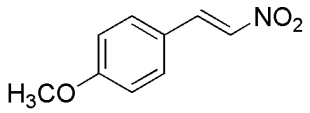
[b]Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300072, P.R.China

*Corresponding Author. Tel and Fax: +86 22 27403475; E-mail: ypwei@tju.edu.cn

Table of contents

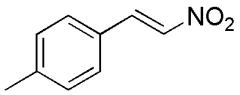
List of Products

1. ^{1}H NMR spectra data of the products.



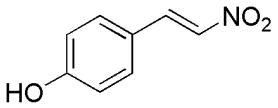
3a

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.98 (d, *J* = 13.6 Hz, 1H), 7.53 (dd, *J* = 11.1, 6.6 Hz, 3H), 6.98 (d, *J* = 8.7 Hz, 2H), 3.89 (s, 3H).[1]



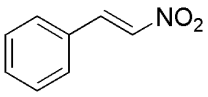
3b

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.01 (d, *J* = 13.6 Hz, 1H), 7.60 (d, *J* = 13.6 Hz, 1H), 7.47 (d, *J* = 8.0 Hz, 2H), 7.29 (d, *J* = 7.8 Hz, 2H), 2.44 (s, 3H).[2]



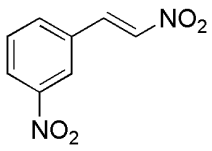
3c

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.01 (d, *J* = 13.6 Hz, 1H), 7.55 (d, *J* = 13.6 Hz, 1H), 7.50 (d, *J* = 8.5 Hz, 2H), 6.94 (d, *J* = 8.5 Hz, 2H), 4.84 - 4.70 (m, 1H).[3]



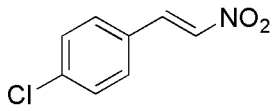
3d

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.04 (d, *J* = 13.7 Hz, 1H), 7.62 (d, *J* = 13.7 Hz, 1H), 7.60 – 7.45 (m, 5H).[2]



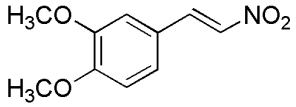
3e

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.45 (s, 1H), 8.38 (d, *J* = 8.2 Hz, 1H), 8.08 (d, *J* = 13.7 Hz, 1H), 7.90 (d, *J* = 7.7 Hz, 1H), 7.75 – 7.66 (m, 2H).[4]



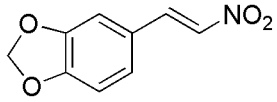
3f

Light yellowish solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.99 (d, *J* = 13.7 Hz, 1H), 7.60 (d, *J* = 13.7 Hz, 1H), 7.52 (d, *J* = 8.5 Hz, 2H), 7.46 (d, *J* = 8.5 Hz, 2H).[2]



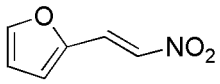
3g

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.16 – 7.87 (m, 1H), 7.70 – 7.49 (m, 1H), 7.33 – 7.15 (m, 1H), 7.13 – 6.75 (m, 2H), 3.97 (s, 6H).[4]



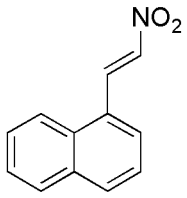
3h

Orange yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 7.96 (d, *J* = 13.5 Hz, 1H), 7.51 (d, *J* = 13.5 Hz, 1H), 7.12 (d, *J* = 7.7 Hz, 1H), 7.04 (s, 1H), 6.91 (d, *J* = 7.9 Hz, 1H), 6.10 (s, 2H).[4]



3i

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.81 (d, *J* = 13.2 Hz, 1H), 7.64 – 7.51 (m, 2H), 6.92 (d, *J* = 3.4 Hz, 1H), 6.61 (dd, *J* = 3.3, 1.7 Hz, 1H).



3j

Yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ = 8.85 (d, *J* = 13.4 Hz, 1H), 8.14 (t, *J* = 7.9 Hz, 1H), 8.02 (t, *J* = 6.6 Hz, 1H), 7.95 (d, *J* = 7.8 Hz, 1H), 7.76 (t, *J* = 6.5 Hz, 1H), 7.70 – 7.59 (m, 3H), 7.54 (t, *J* = 7.7 Hz, 1H).[4]

References

1. Y. M. McNamara, S. M. Cloonan, A. J. S. Knox, J. J. Keating, S. G. Butler, G. H. Peters, M. J. Meegan and D. C. Williams, *Bioorg. Med. Chem.*, 2011, **19**, 1328-1348.
2. M. Zhang, P. Hu, J. Zhou, G. Wu, S. J. Huang and W. P. Su, *Org. Lett.*, 2013, **15**, 1718-1721.
3. K. Kiyokawa, T. Nagata, J. P. Hayakawa and S. Minakata, *Chem. Eur. J.*, 2015, **21**, 1280-1285.
4. S. Manna, S. Jana, T. Saboo, A. Maji and D. Maiti, *Chem. Commun.*, 2013, **49**, 5286-5288.

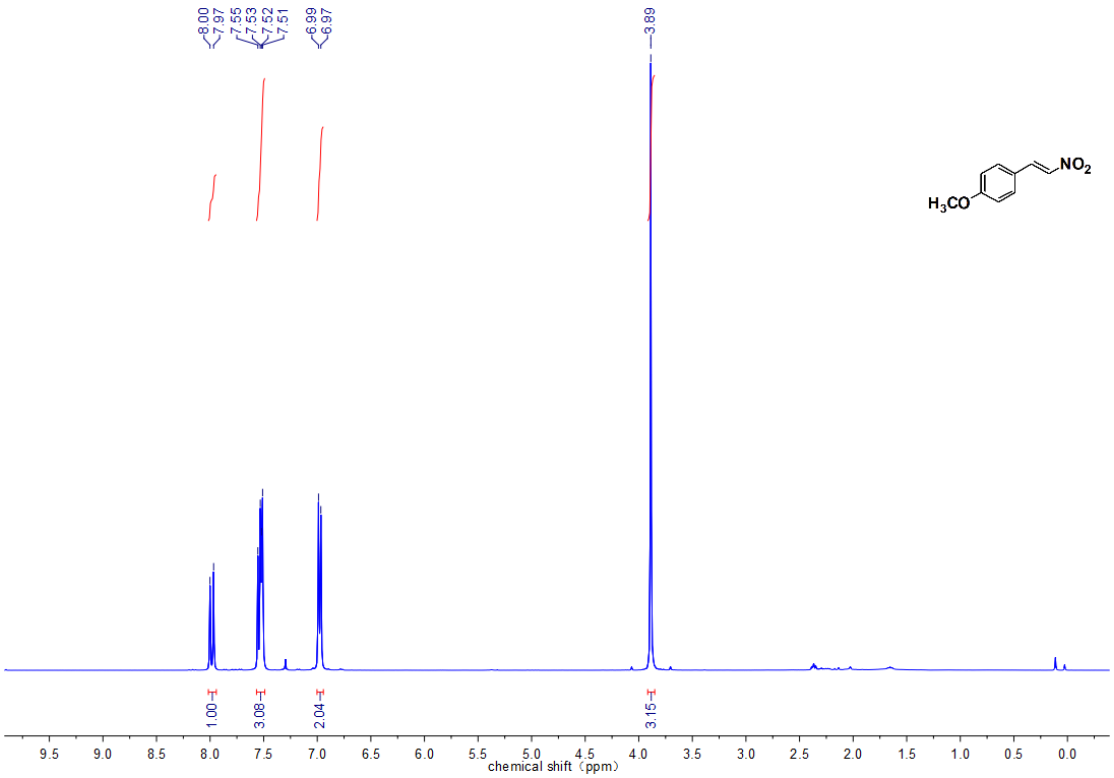


Fig. S1 ^{1}H NMR spectra of 3a in $CDCl_3$

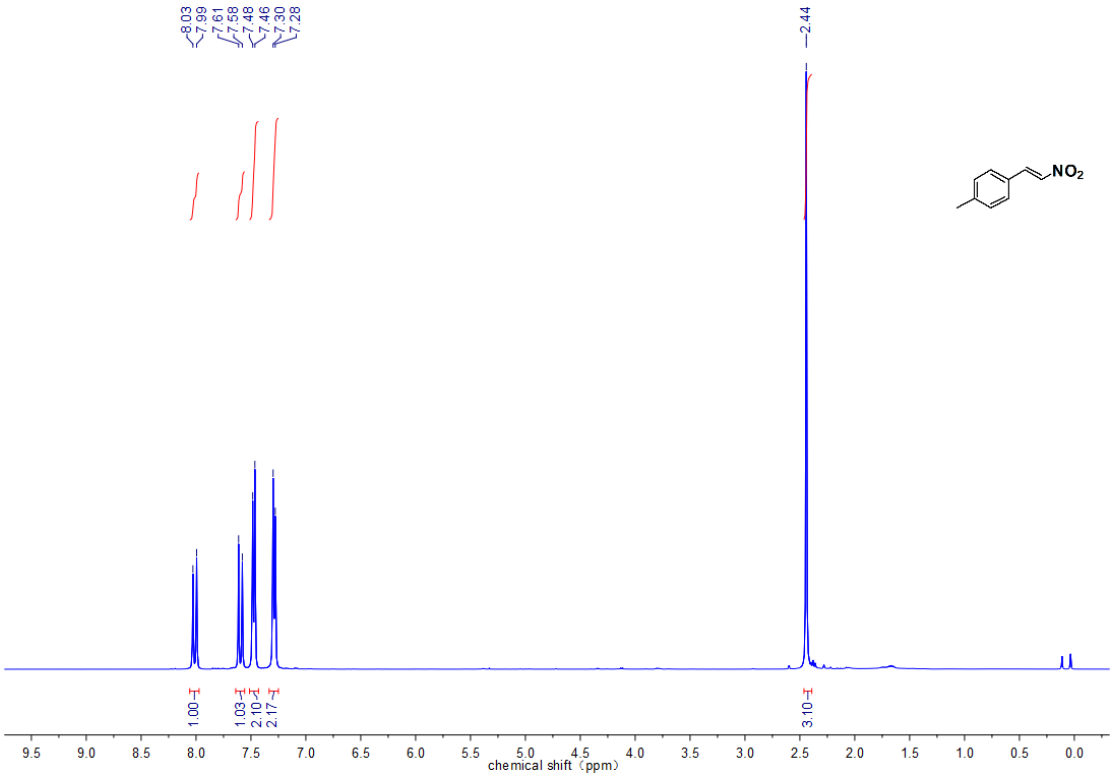


Fig. S2 ^{1}H NMR spectra of 3b in $CDCl_3$

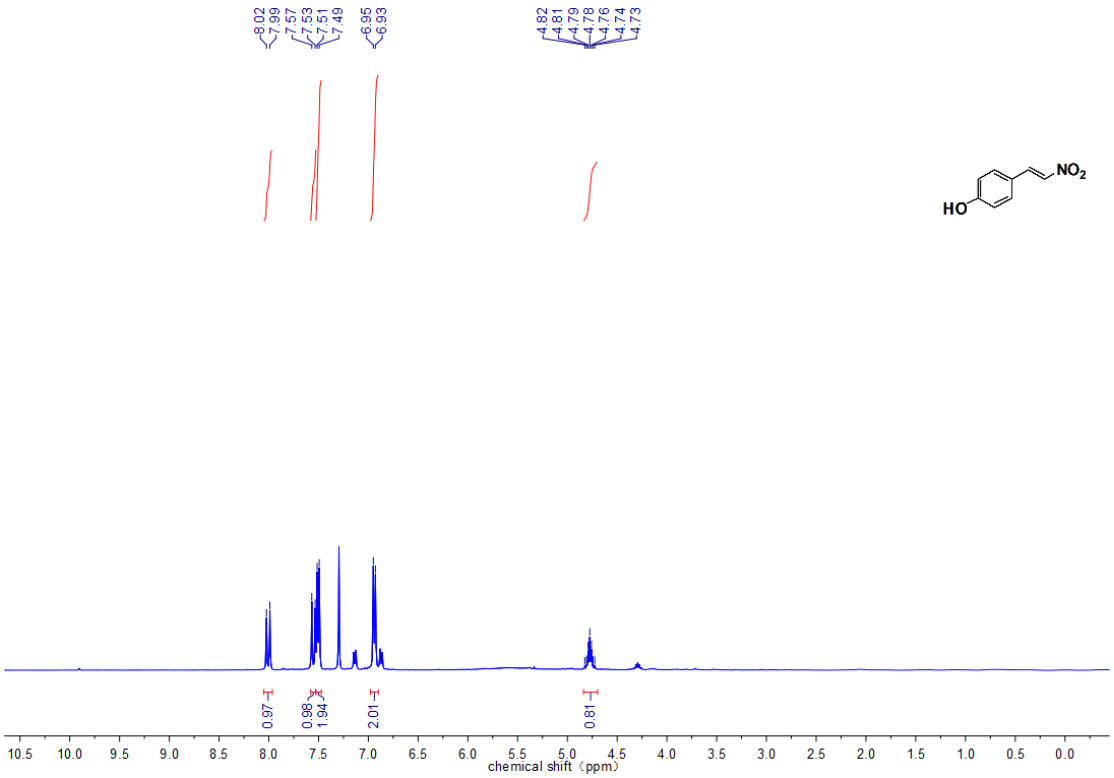


Fig. S3 ^{1}H NMR spectra of 3c in $CDCl_3$

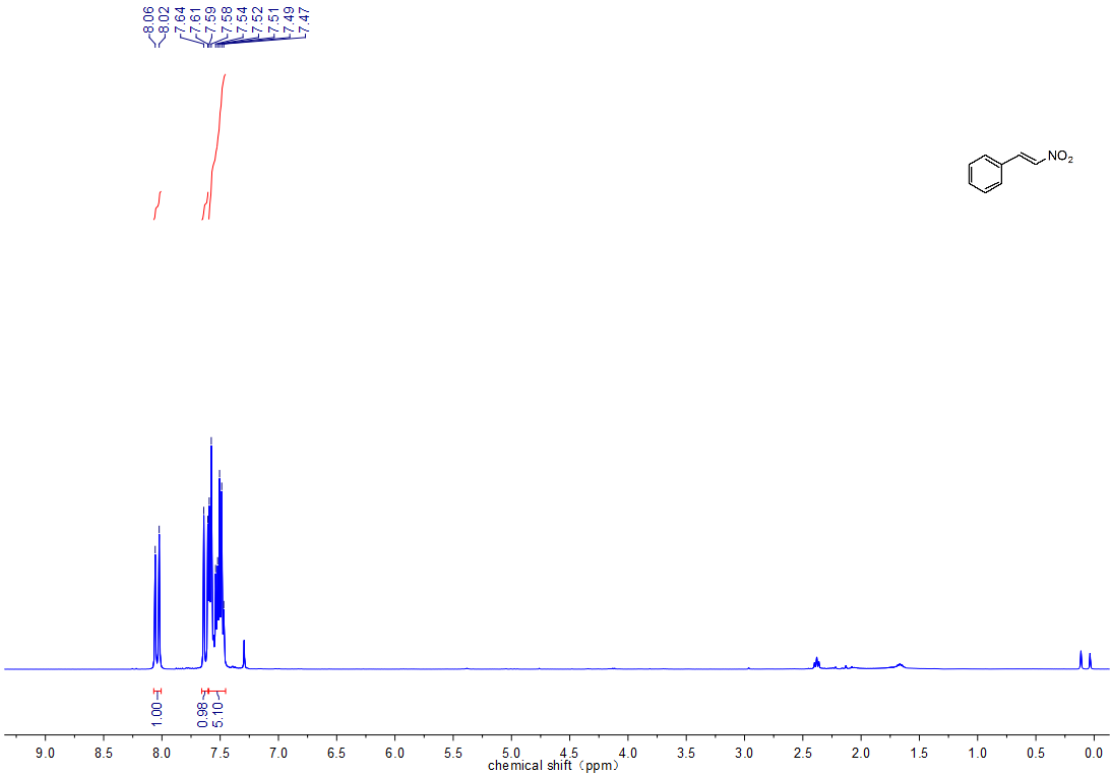


Fig. S4 ^{1}H NMR spectra of 3d in $CDCl_3$

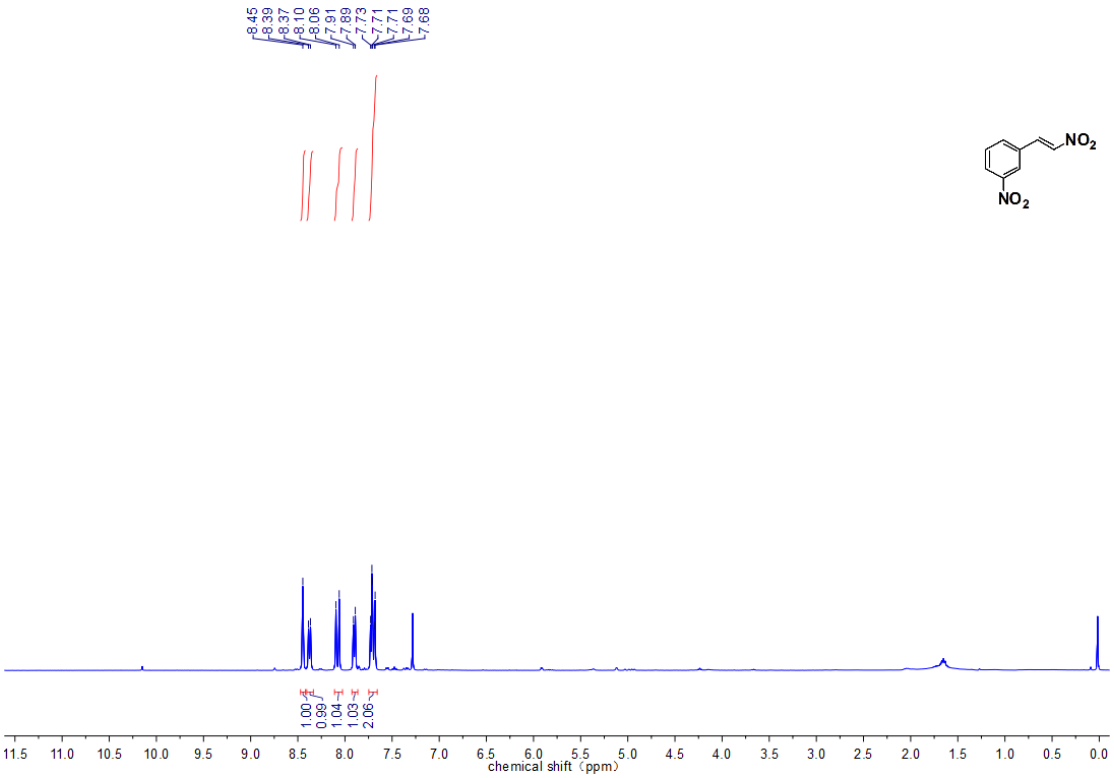


Fig. S5 ^{1}H NMR spectra of 3e in $CDCl_3$

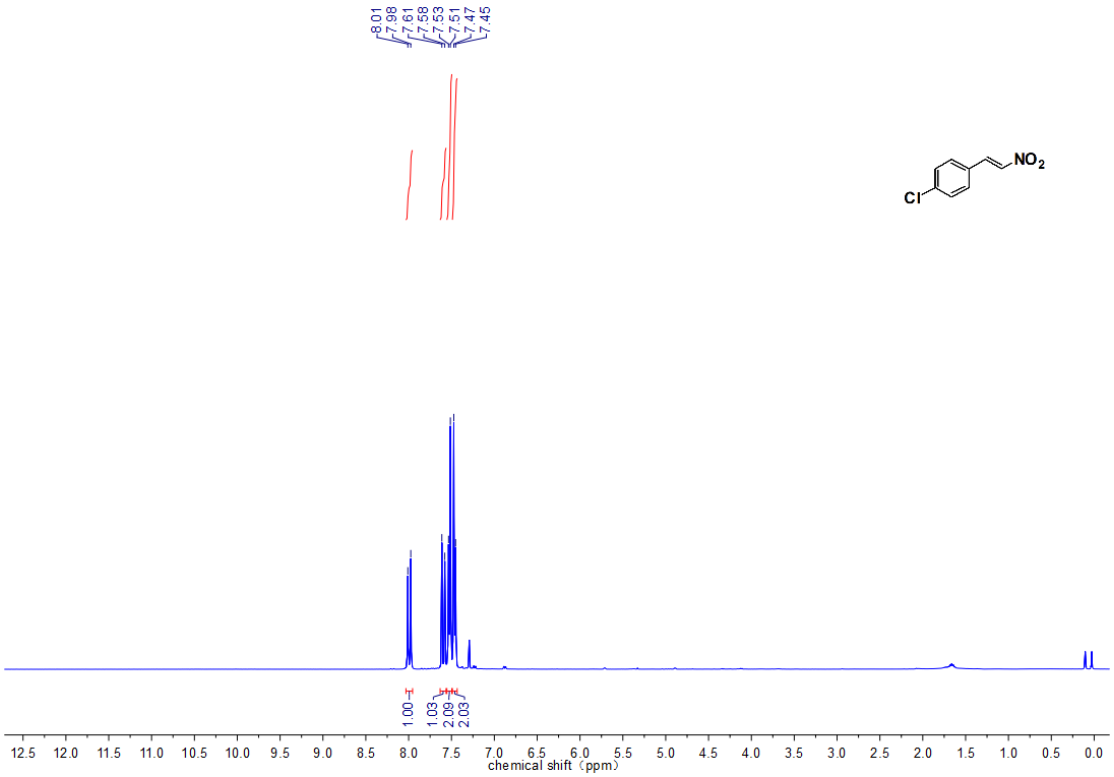


Fig. S6 ^{1}H NMR spectra of 3f in $CDCl_3$

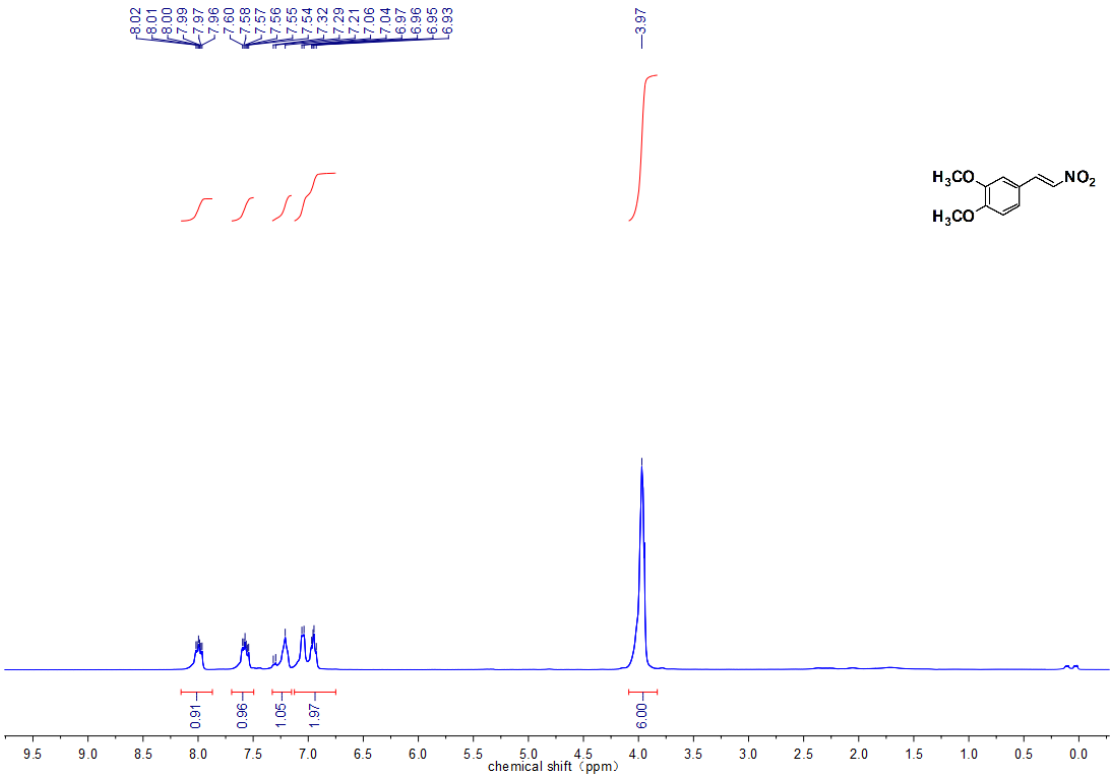


Fig. S7 ^{1}H NMR spectra of 3g in $CDCl_3$

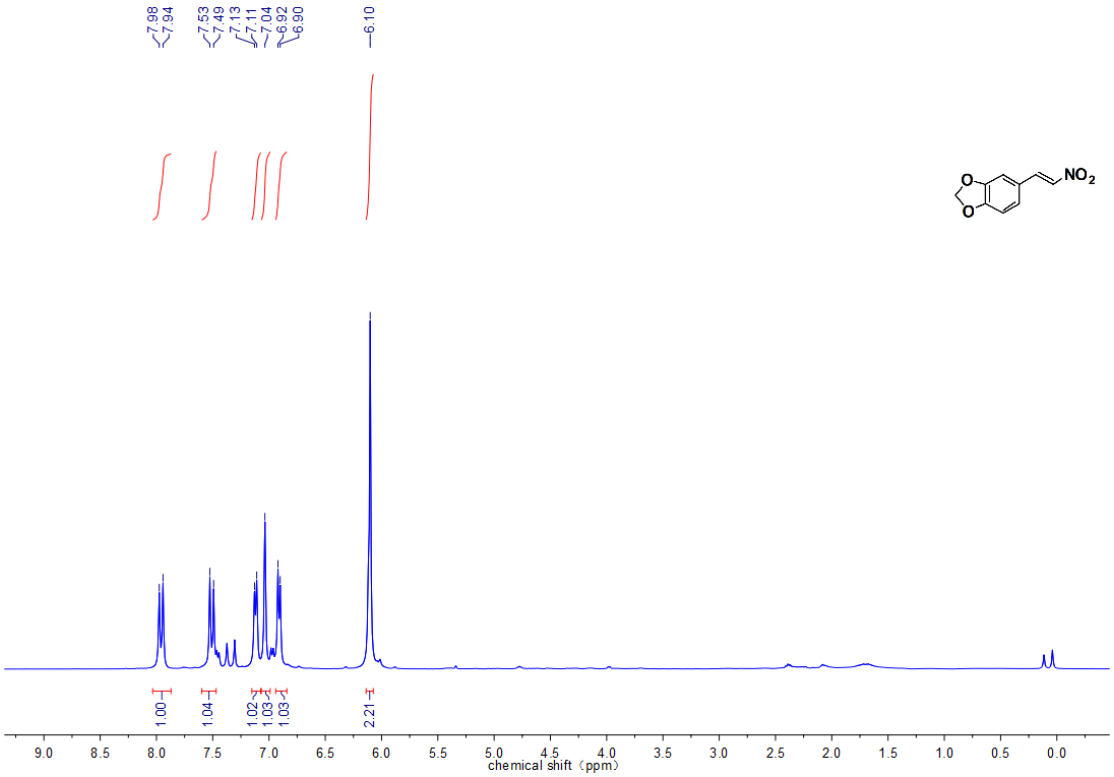


Fig. S8 ^{1}H NMR spectra of 3h in $CDCl_3$

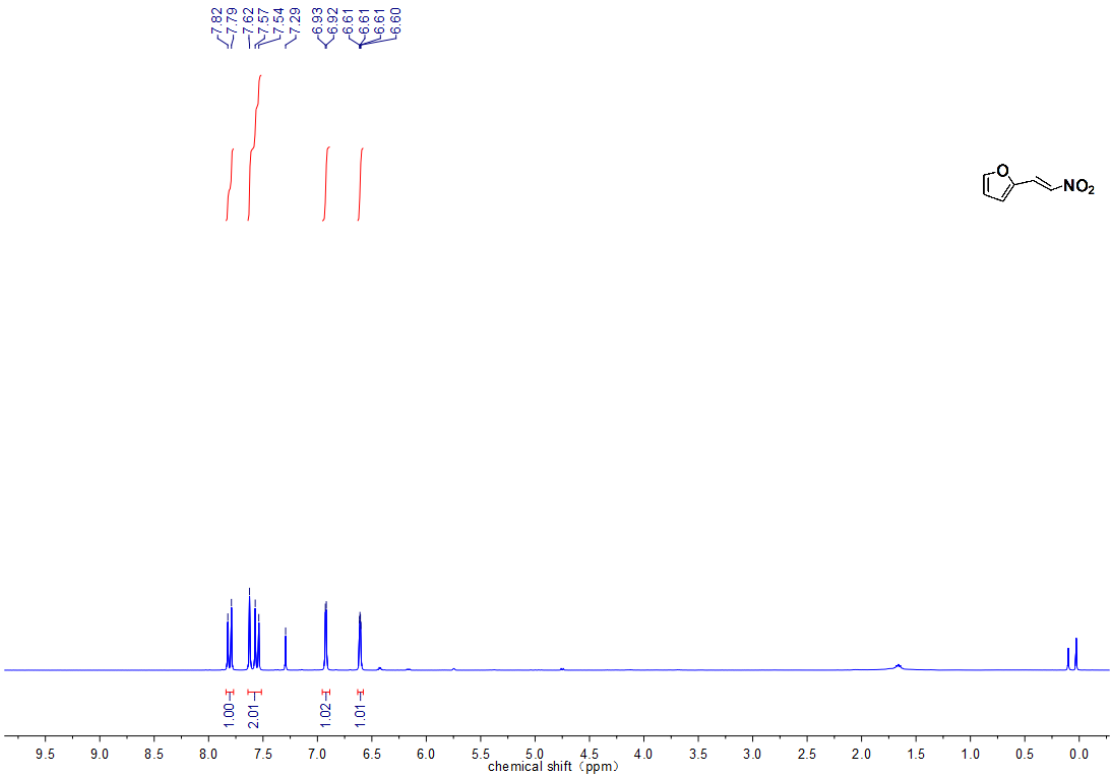


Fig. S9 ^{1}H NMR spectra of 3i in $CDCl_3$

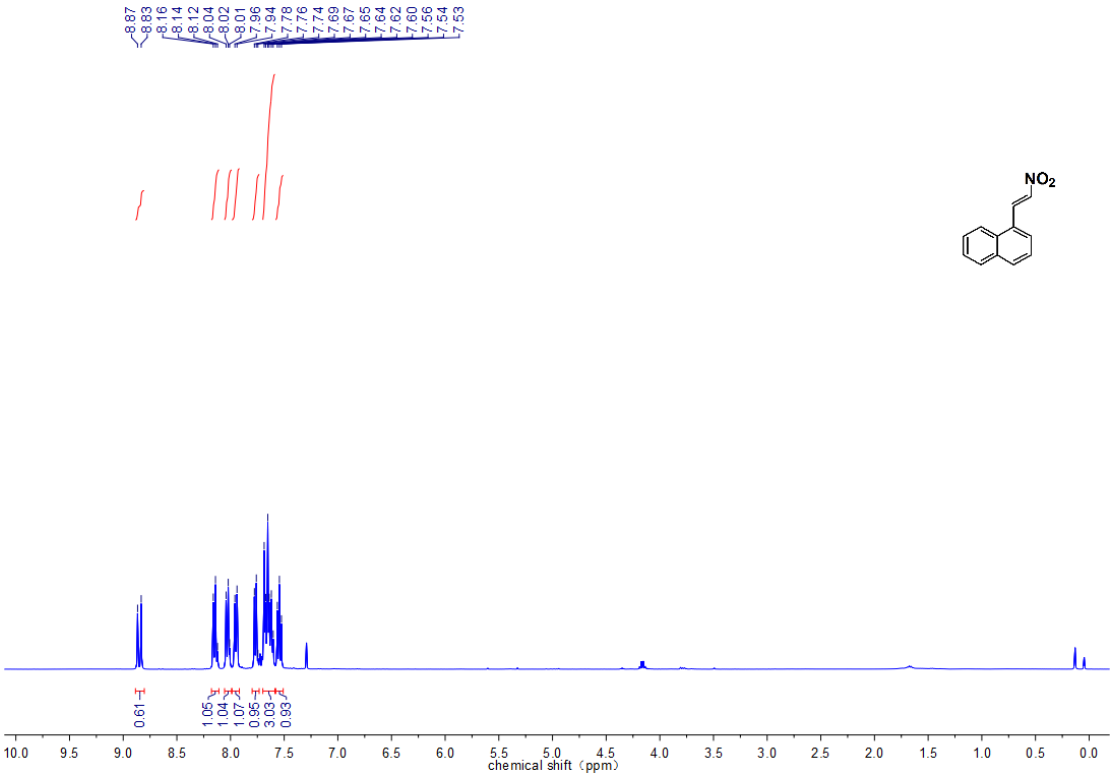


Fig. S10 ^{1}H NMR spectra of 3j in $CDCl_3$