Supporting information

Immobilized triazine bis[mercapto amine] complexes of Pd(0) anchored nickel ferrite as a nanocatalyst for C-C coupling reaction

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Spectral data for trans-stilbene derivatives

Trans-stilbene; (**3a**) Colorless solid; m.p = 120-122°C (Lit. [1] 125°C). IR (KBr)/ ν (cm^{-1}); 2992, 1602, 1495, 780. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.55 (d, *J* = 7.6 Hz, 2H), 7.39 (t, *J*= 7.6 Hz, 2H), 7.30 (d, *J*= 7.2 Hz, 1H), 7.15 (s, 1H).

4-Methoxy-trans-stilbene; (**3c, 3i**) Colorless solid; m.p = 130-132°C (Lit. [2]134-136°C). IR (KBr)/ ν (cm^{-1}): 3009, 2835, 1606, 1513, 1445, 1368, 1291, 1182. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.49 (d, *J*=8.8 Hz, 2H), 7.38 (d, *J*=8.0 Hz, 2H), 7.31-7.28 (2H, m), 7.15-7.12 (1H, m), 7.1 (d, *J*=16.4 Hz, 1H), 7.0 (d, *J*=16.4 Hz, 1H), 6.93 (d, *J*=7.2 Hz, 2H),3.85 (3H, s).

4-Methyl-trans-stilbene; (**3k**) Colorless solid; m.p = 118-120°C (Lit. [3] 119-122°C). IR (KBr)/ ν (cm^{-1}): 2987, 1600, 1495, 1380, 885. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.53 (d, *J*=6.8 Hz, 2H), 7.48 (d, *J*=7.6 Hz, 2H), 7.41 (t, *J*=7.6 Hz, 2H), 7.26-7.23(1H, m), 7.18 (d, *J*=6.8Hz, 2H), 7.12 (d, *J*=16.6 Hz, 1H), 7.08 (d, *J*=16.6vHz, 1H), 2.55 (3H, s).

4-nitro-trans-stilbene; (**3j, 3n**) Yellow solid; m.p = 156–157 °C (Lit. [4] 151-153°C). IR (KBr)/ ν (cm^{-1}): 3022, 2935, 2837, 1686, 1594, 1574, 1494, 1448, 1338, 1158, 1103, 1078, 983, 972, 851, 773, 692. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 8.25 (d, J = 8.4 Hz, 2H), 7.65 (d, J = 8.4 Hz, 2H), 7.57 (d, J = 7.5 Hz, 2H), 7.42-7.36 (m, 3H), 7.30 (d, J =16 Hz, 1H) 7.14 (d, J =16 Hz, 1H).

3-methyl-trans-stilbene; (**3d**) White solid; m.p = 41-43°C (Lit. [5] 40-45°C). IR (KBr)/ ν (cm^{-1}): 3023, 1599, 1495, 1448, 965, 782, 748, 692. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.57 (d, J = 7.6 Hz, 2H), 7.43-7.38 (d of d, J = 14.4 Hz, 4H), 7.31 (t, J = 7.8 Hz, 2H), 7.17 (d, J = 6.4 Hz, 3H), 2.35 (s, 3H).

4-Cyano-trans-stilbene; (**3b**) Yellow solid; m.p = 115-117 ºC (Lit. [3]116-118°C). IR (KBr)/ ν (cm^{-1}): 3021, 2836, 2361, 1605, 1505, 1363. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.72-7.53 (m, 5H), 7.46-7.30 (m, 4H), 7.22 (d, J=16.4, 1H), 7.09 (d, J=16.4, 1H).

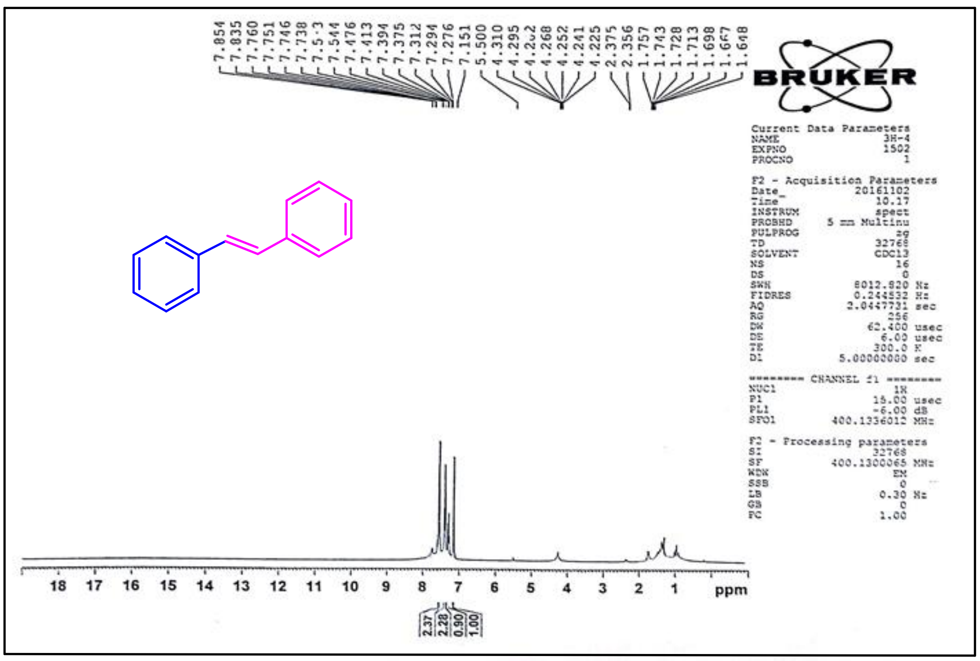
4-Acetyl-trans-stilbene; (**3h**) White solid, m.p = 134-136°C (Lit. [6] 135-137°C). IR (KBr)/ ν (cm^{-1}): 2994, 1680, 1601, 1495, 1383, 880. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.96 (d, J = 8.0 Hz, 2H), 7.60 (d, J = 8.0 Hz, 2H), 7.55 (d, J = 7.6 Hz, 2H), 7.41 (t, J = 7.6 Hz, 2H), 7.31 (t, J = 7.6 Hz, 1H), 7.25 (d, J = 16.4 Hz, 1H), 7.14 (d, J = 16.4 Hz, 1H), 2.62 (s, 3H).

4-Formyl-trans-stibene; (**3e, 3m**) yellow solid; m.p =118-120°C (Lit. [7] 115-116°C). IR (KBr)/ ν (cm^{-1}): 2995, 2851, 1701, 1603, 1499, 910, 845. ^{1}H NMR (400 MHz, $CDCl_3$) δ : 9.99 (s, 1H), 7.86 (d, J = 7.6 Hz, 2H), 7.64 (d, J = 7.6 Hz, 2H), 7.55(d, J = 7.6 Hz, 2H), 7.40 (t, J = 6.0 Hz, 2H), 7.29 (t, J = 6.4 Hz. 1H), 7.21 (d, J = 16.4 Hz, 1H), 7.07(d, J = 16 Hz, 1H).

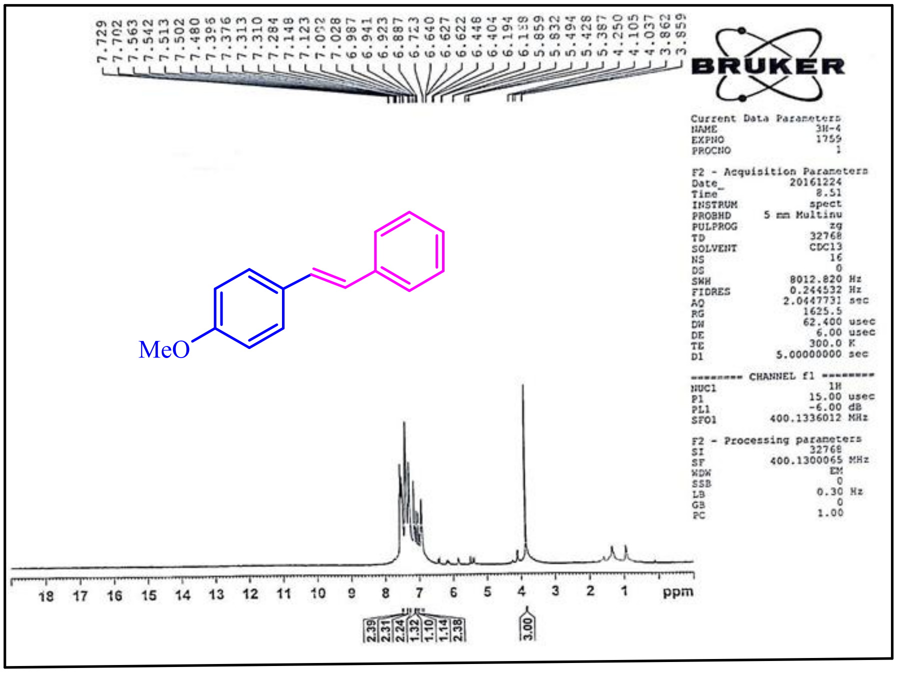
1, 4-Bis [(E)-2-phenylethenyl] benzene; (**3g**) light green solid; m.p = 254-258°C (Lit. [8]254°C) IR (KBr)/ ν (cm^{-1}): 3024, 1595, 1561, 1510, 1484, 1446, 968. ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.52 (d, J=8.4, 2H), 7.45 (d, J=7.6, 1H), 7.36 (m, 2H), 7.28 (d, J=15.6, 2H), 7.23 (d, J=7.6, 1H), 7.14 (m, 1H).

3-chloro-trans-stilbene; (**3f**) white solid; 62–64 °C (Lit [7] 64–69 °C). IR (KBr)/ ν (cm^{-1}): 3045, 2950, 1589. ^{1}H NMR (400 MHz, CDCl$_3$) δ: 52 (m, 3H), 7.36 (m, 3H), 7.27 (m, 2H), 7.13 (m, 1H), 7.08 (d, *J*=16 Hz, 1H), 7.01 (d, *J*=16 Hz, 1H).

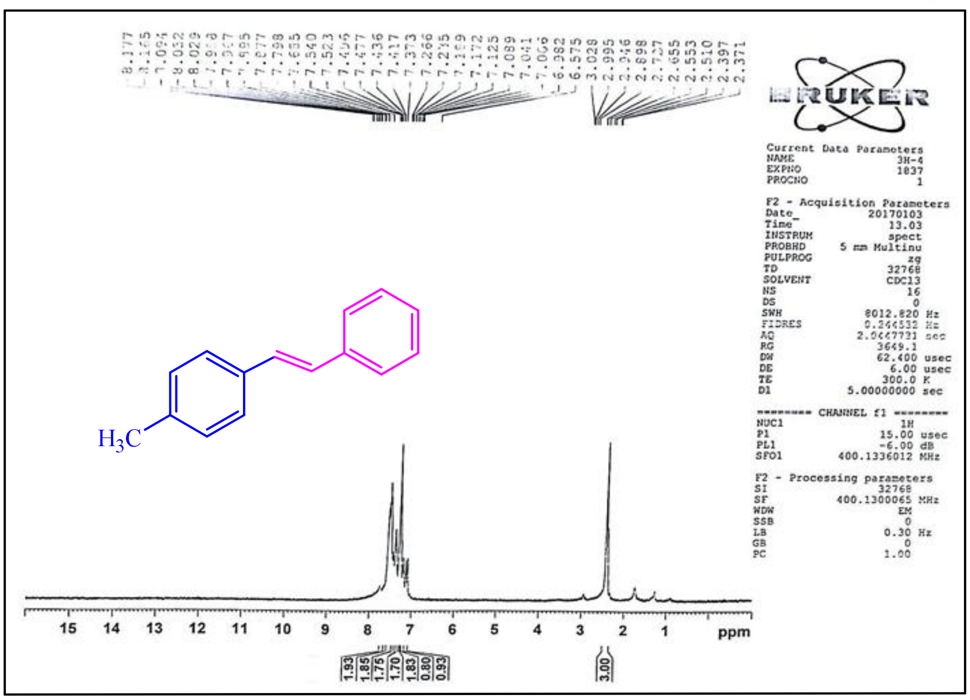
Methyl (E)-4-styryl benzoate; (**3l**) white solid, m.p =154-156°C (Lit [9] 158°C). IR (KBr)/ ν (cm^{-1}): 3024, 2945, 1708, 1602, 1434, 1277, 1179, 1105, 963, 835, 771, 698, 670, 579. ^{1}H NMR (400 MHz, CDCl$_3$) δ: 8.03 (d, *J*=6.7 Hz, 2H), 7.50-7.58 (m, 4H), 7.46-7.32 (m, 3H), 7.28 (d, *J*=16 Hz, 1H), 7.13 (d, *J*=16 Hz, 1H), 3.93 (s, 3H).



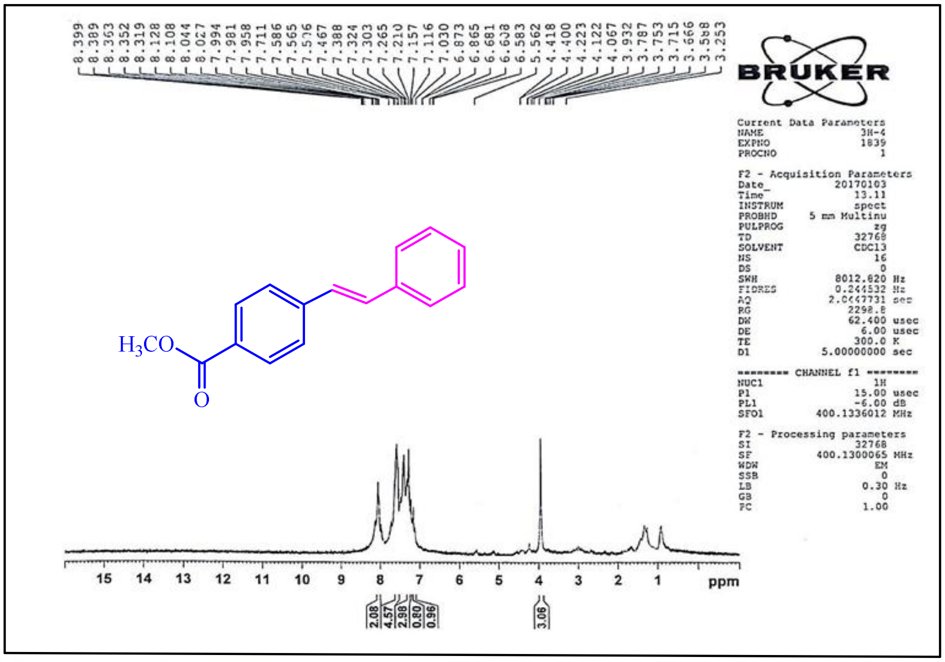
^{1}H NMR of Trans-stilbene (**3a**)



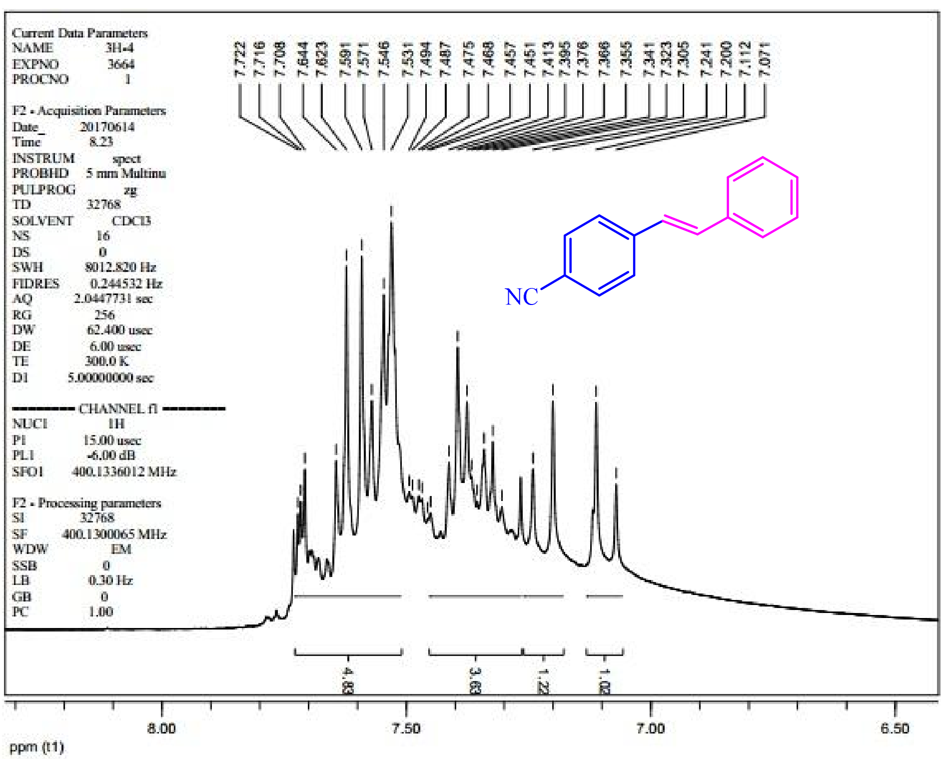
[1]H NMR of 4-Methoxy-trans-stilbene (**3c, 3i**)



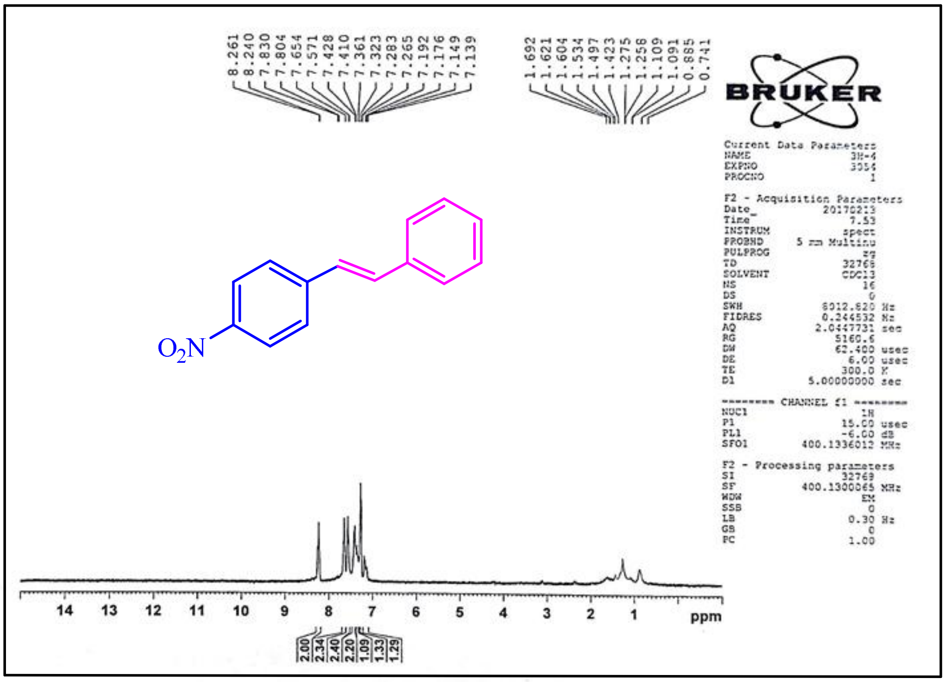
[1]H NMR of 4-Methyl-trans-stilbene (**3k**)



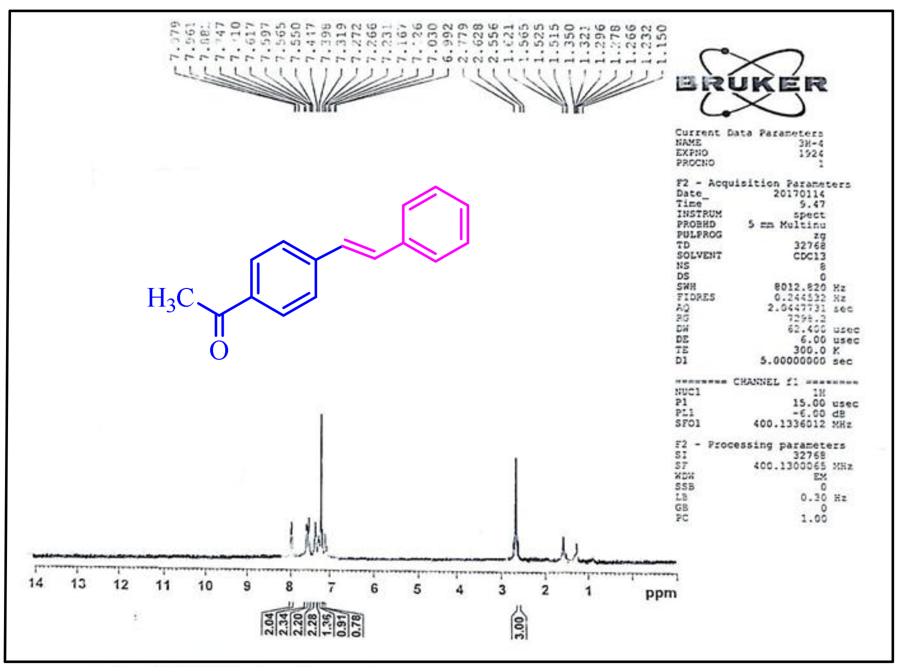
[1]H NMR of Methyl (E)-4-styryl benzoate (**3l**)



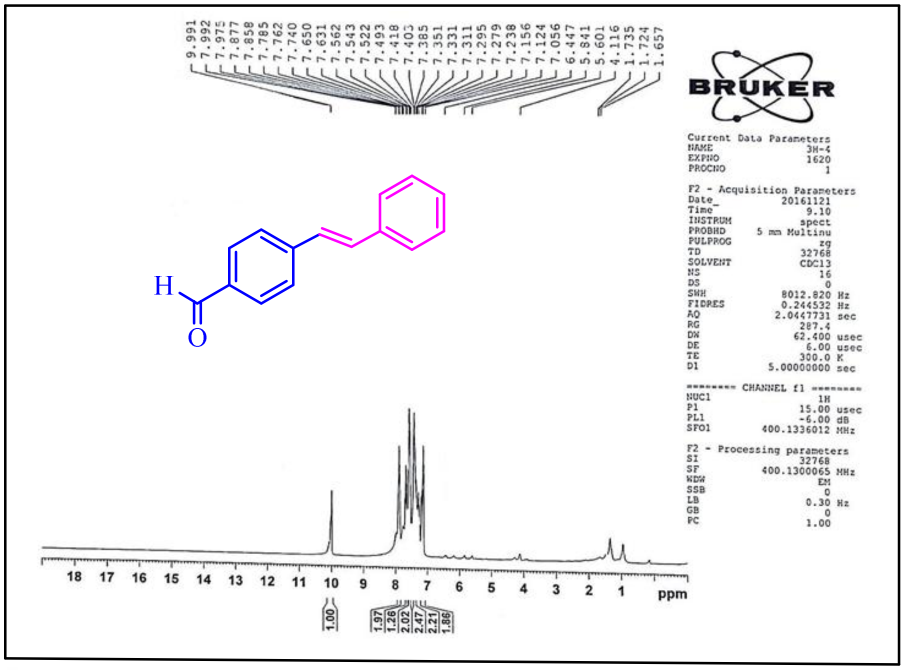
[1]H NMR of4-Cyano-trans-stilbene (**3b**)



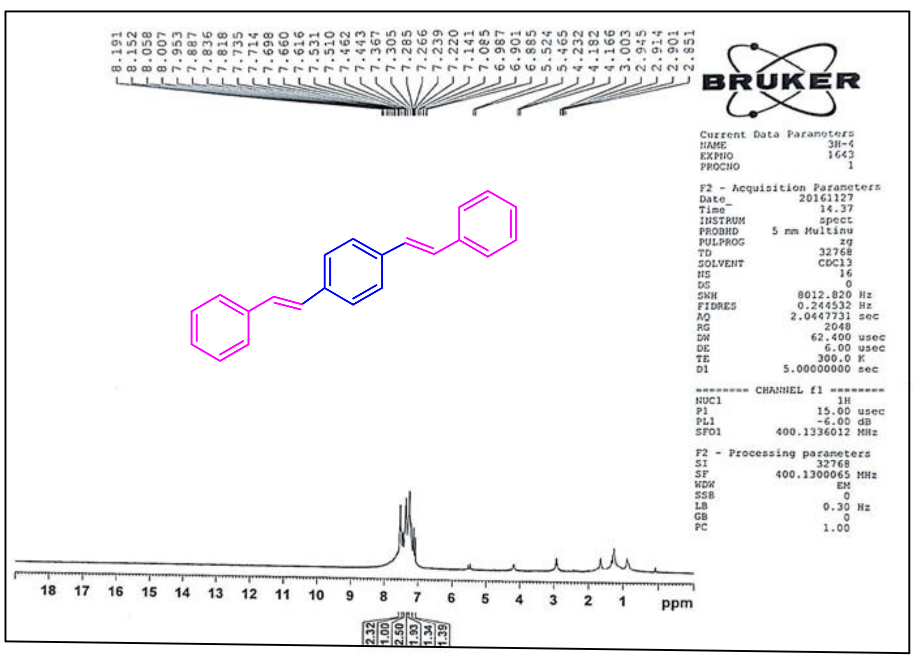
^{1}H NMR of 4-nitro-trans-stilbene (**3j, 3n**)



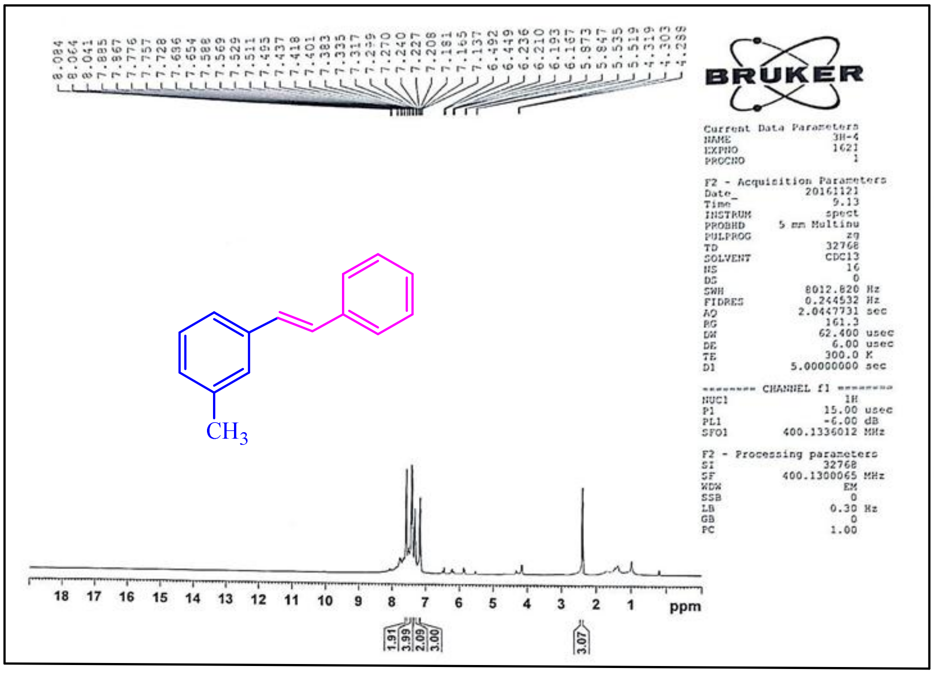
^{1}H NMR of 4-Acetyl-trans-stilbene (**3h**)



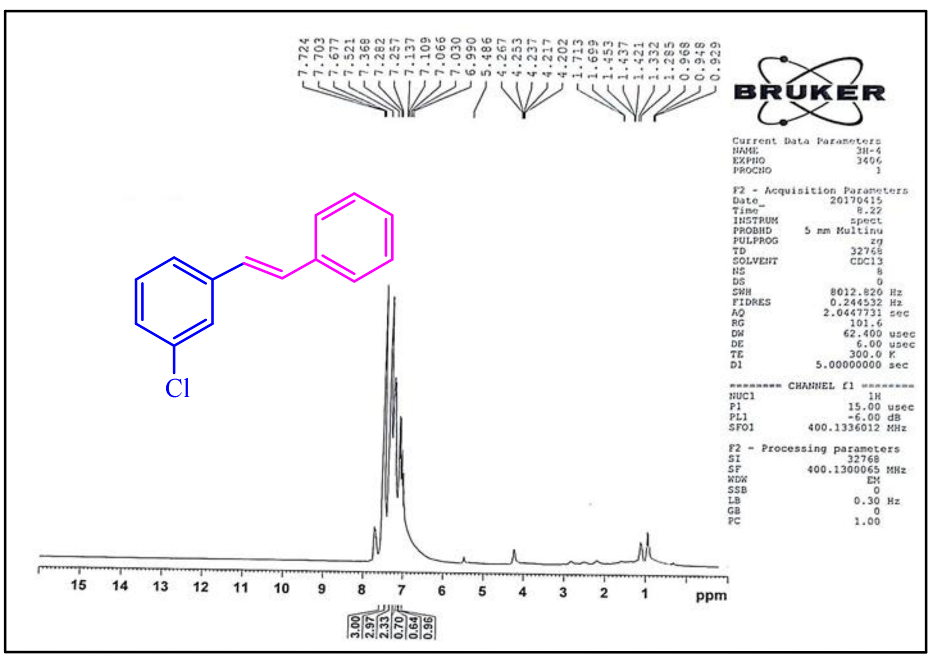
^{1}H NMR of 4-Formyl-trans-stibene (**3e, 3m**)



^{1}H NMR of 1,4-bis [(E)-2-phenylethenyl] benzene (**3g**)



[1]H NMR of 3-methyl-trans-stilbene (**3d**)



[1]H NMR of 3-chloro-trans-stilbene (**3f**)

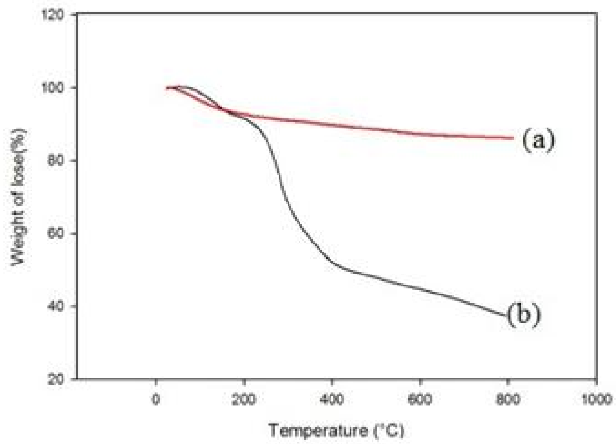


Fig. S1. Thermo gravimetric analysis of a) $NiFe_2O_4@SiO_2$ b) $NiFe_2O_4$@TASDA-Pd(0).

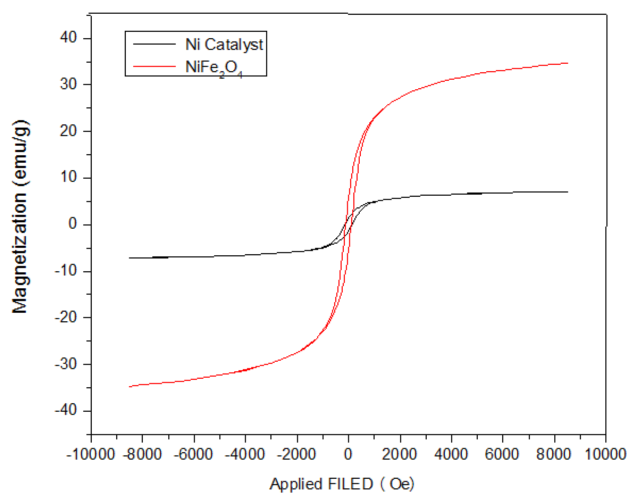


Fig. S2. The vibrating sample magnetometer curve of $NiFe_2O_4$ nanoparticles and $NiFe_2O_4$@TASDA-Pd(0).