

Supporting Information

A Click Strategy for the Immobilization of Palladium nanoparticles onto Silica: Efficient and recyclable catalysts for carbon–carbon bond formation under mild reaction conditions

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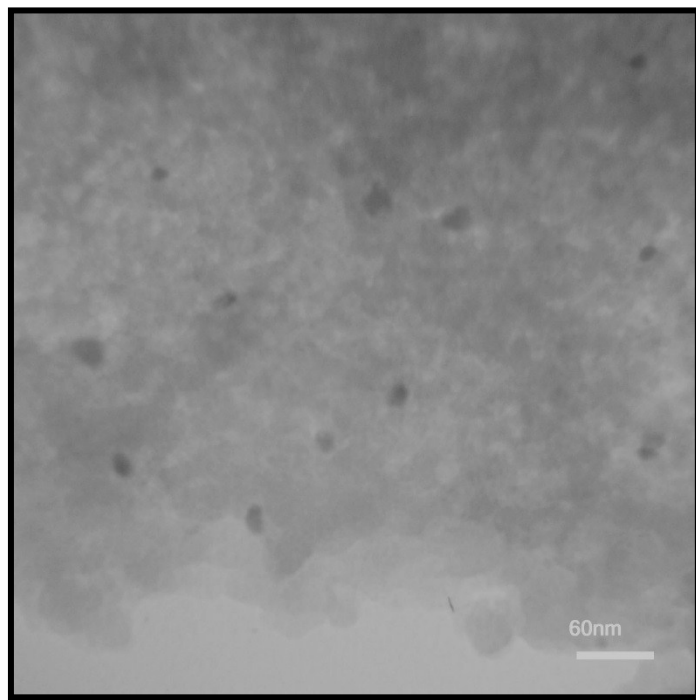


Fig S1 TEM micrograph of the recovered catalyst

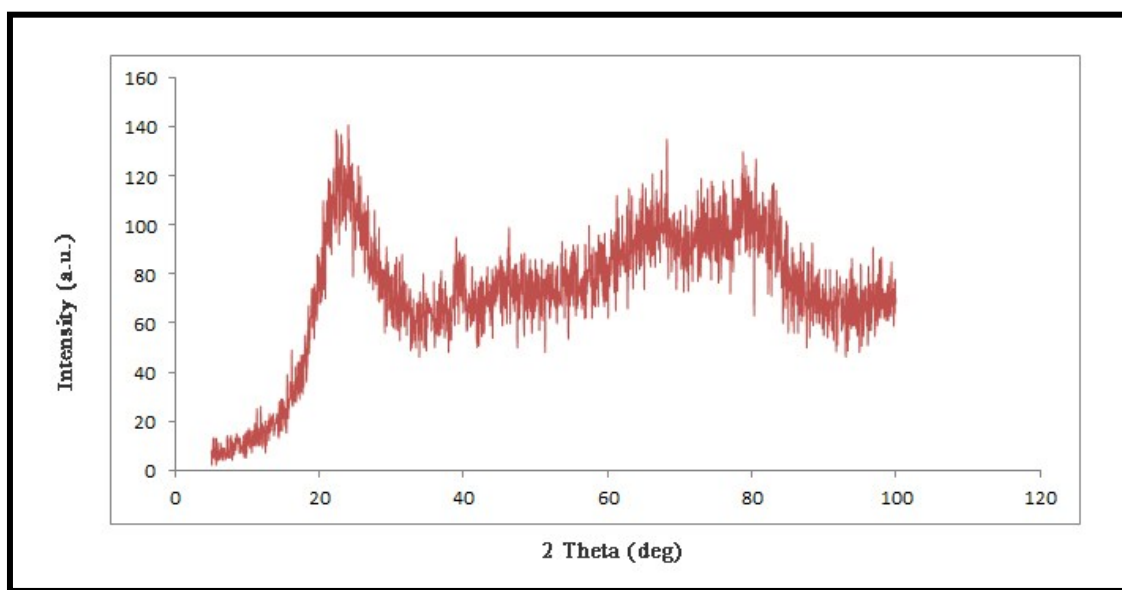
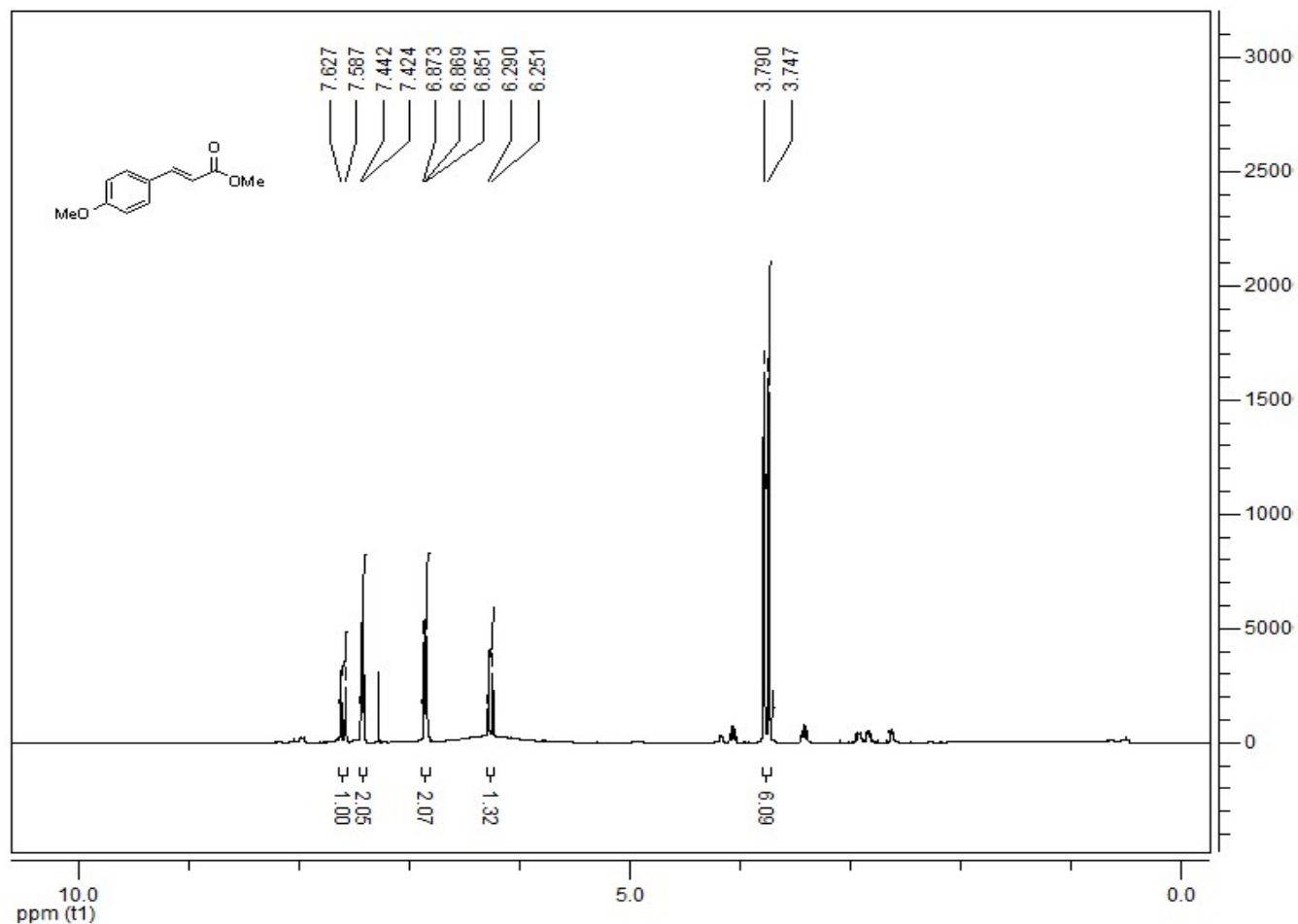


Fig S2 XRD pattern of the recovered catalyst

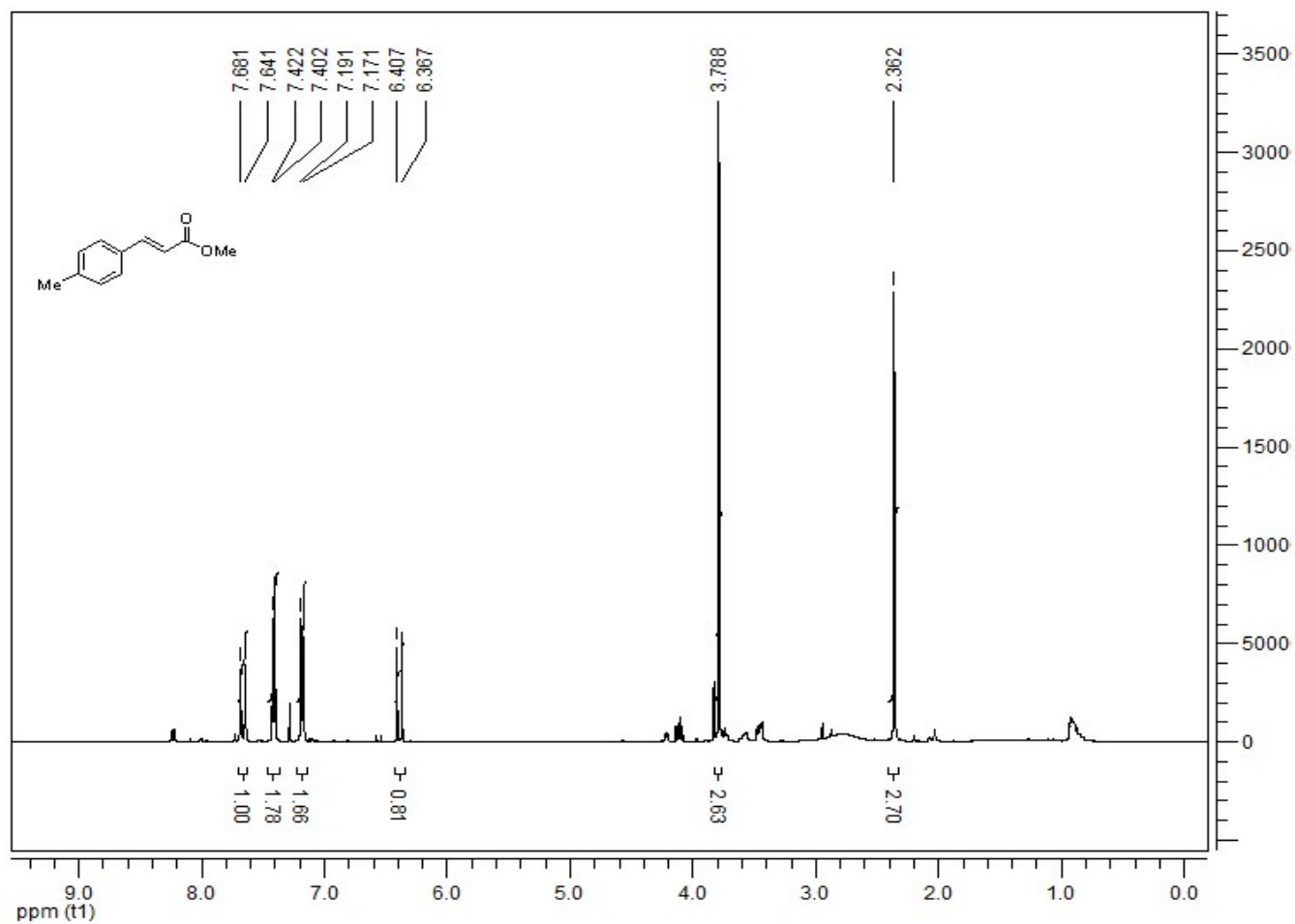
¹H-NMR, FT-IR and boiling points of most of products



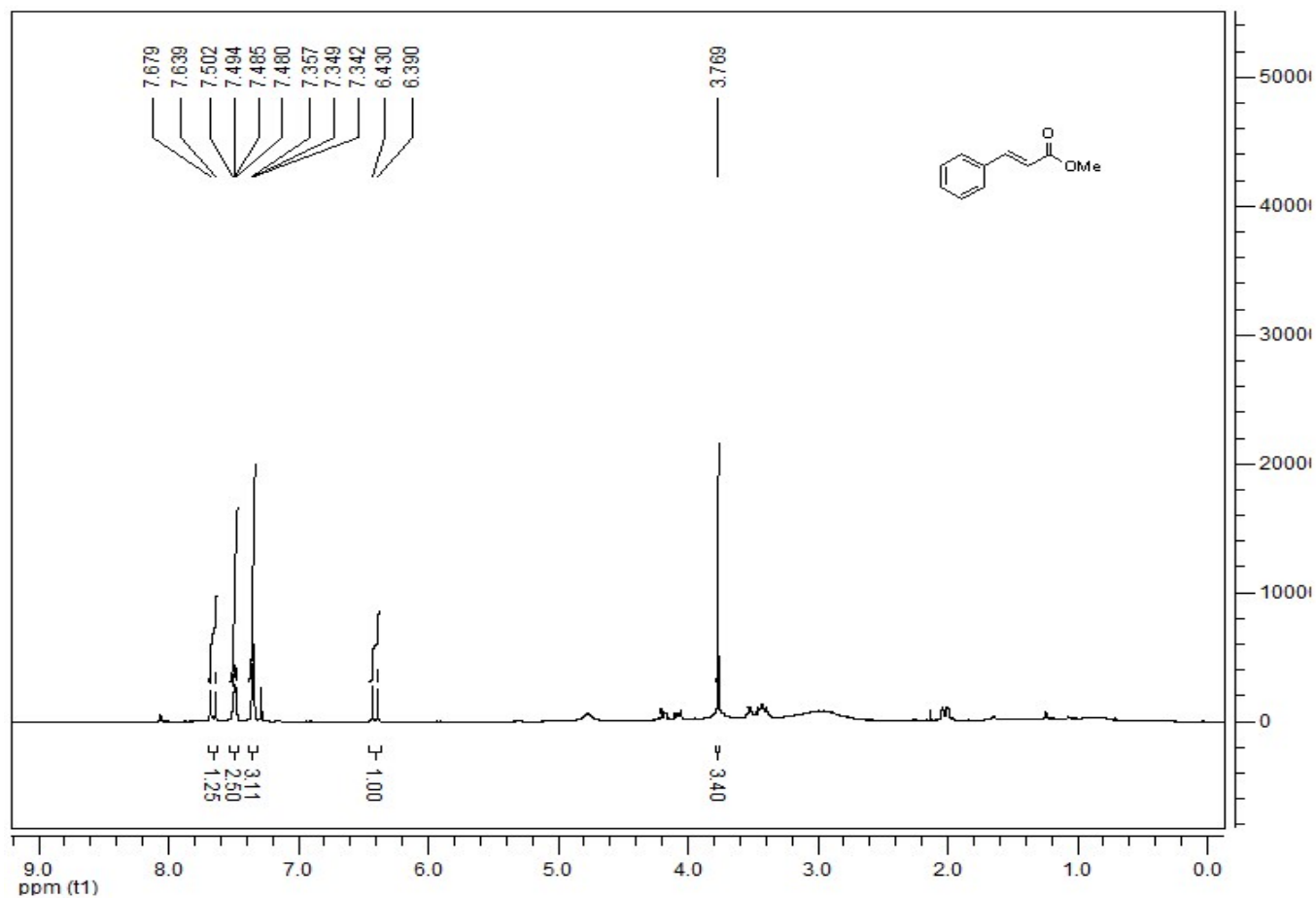
Pale yellow solid melting point: 86 °C

¹H NMR (400 MHz, CDCl₃, ppm, TMS): δ = 7.6 (d, J=16Hz, 1H), 7.43 (d, J=7.2Hz, 2H), 6.86(d, J=7.2, 2H), 6.27(d, J= 15.6, 1H), 3.79 (s, 3H), 3.74 (s, 3H)

IR (KBr, cm⁻¹):3032, 3000, 2964, 2844, 1707, 1639, 1595, 1289, 1206, 1026, 969, 837, 538



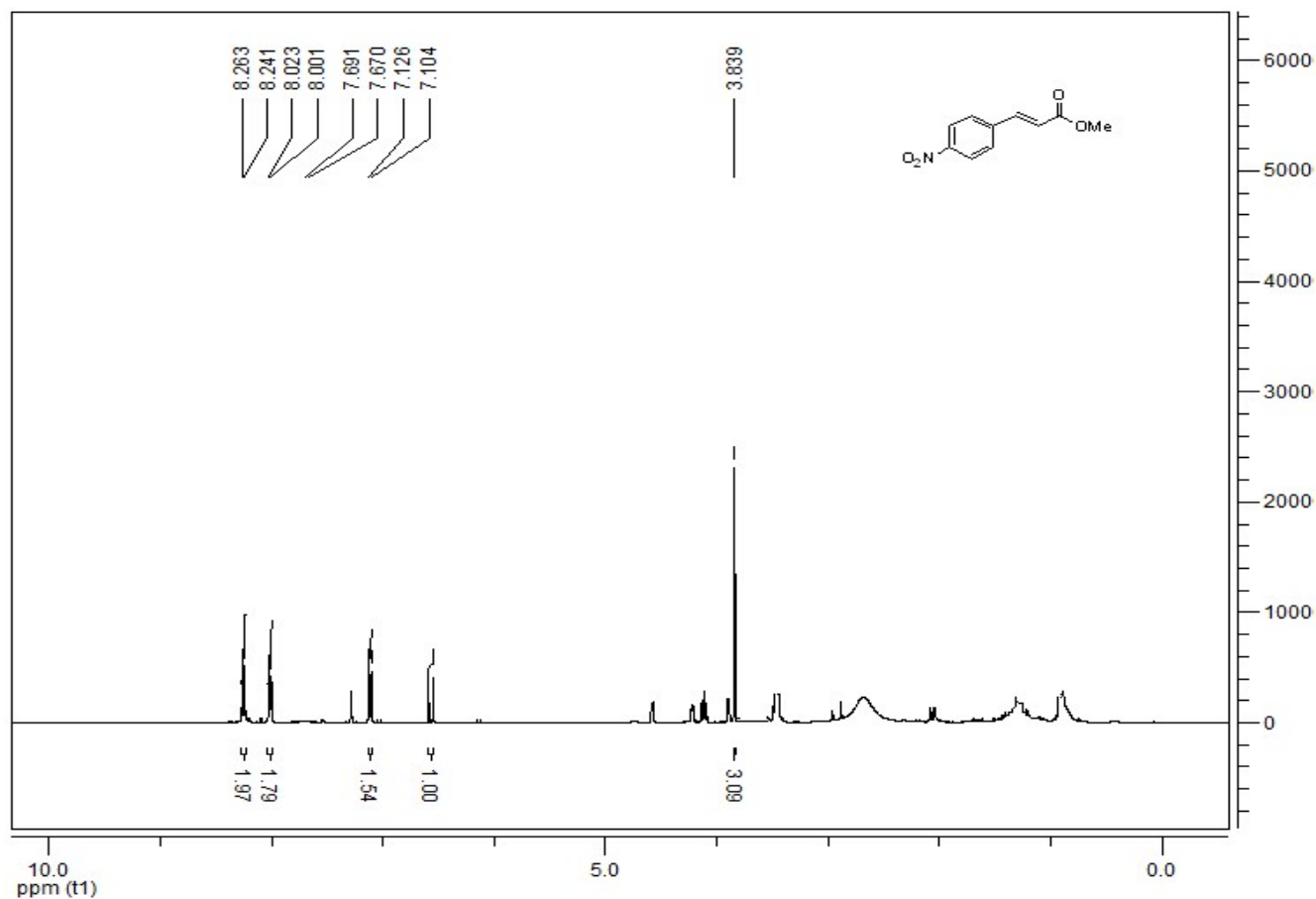
^1H NMR (400 MHz, CDCl_3 , ppm, TMS): $\delta = 7.6$ (d, $J=16\text{Hz}$, 1H), 7.35 (d, $J= 8 \text{ Hz}$, 2H), 7.12 (d, $J= 7.6$, 2H), 6.33 (d, $J=16,1\text{H}$), 3.78 (s, 3H), 2.36 (s, 3H)



Pale yellow solid melting point: 34°C

$^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm, TMS): δ = 7.65(d, J =16Hz, 1H), 7.48(m, 5H), 6.41(d, J =16 Hz, 1H), 3.76 (s, 3H)

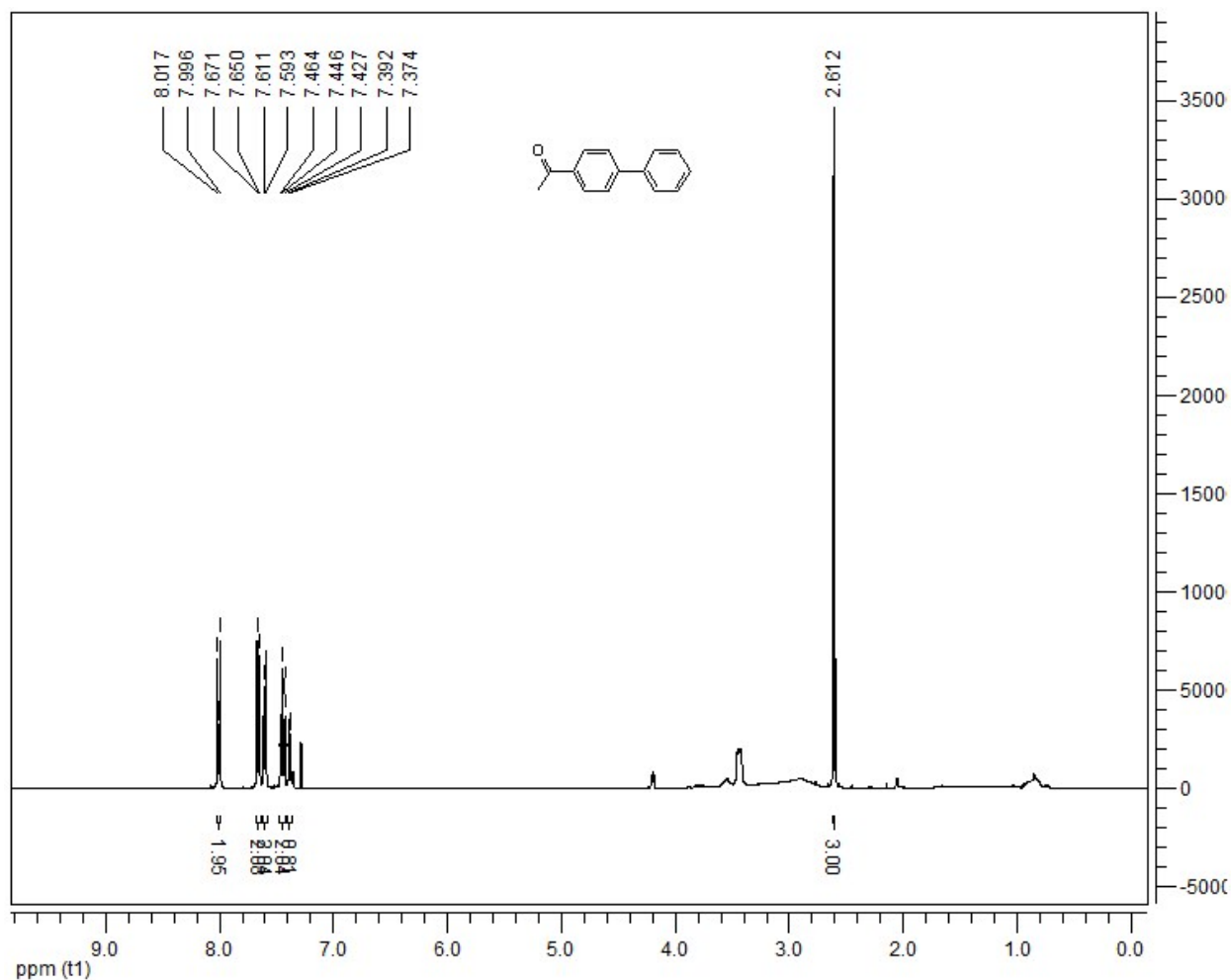
IR (KBr, cm^{-1}): ν = 3062, 2949, 2843, 1718, 1637, 1450, 1202, 1170, 768, 684



Pale yellow solid melting point: 160°C

$^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm, TMS): $\delta = 8.25(\text{d}, J = 8.8 \text{ Hz}, 2\text{H}), 8.01(\text{d}, 8.8 \text{ Hz}, 2\text{H}), 7.68$
 $(\text{d}, J = 8.4 \text{ Hz}, 1\text{H}), 7.11 (\text{d}, J = 8.8 \text{ Hz}, 1\text{H}), 3.83 (\text{s}, 3\text{H})$

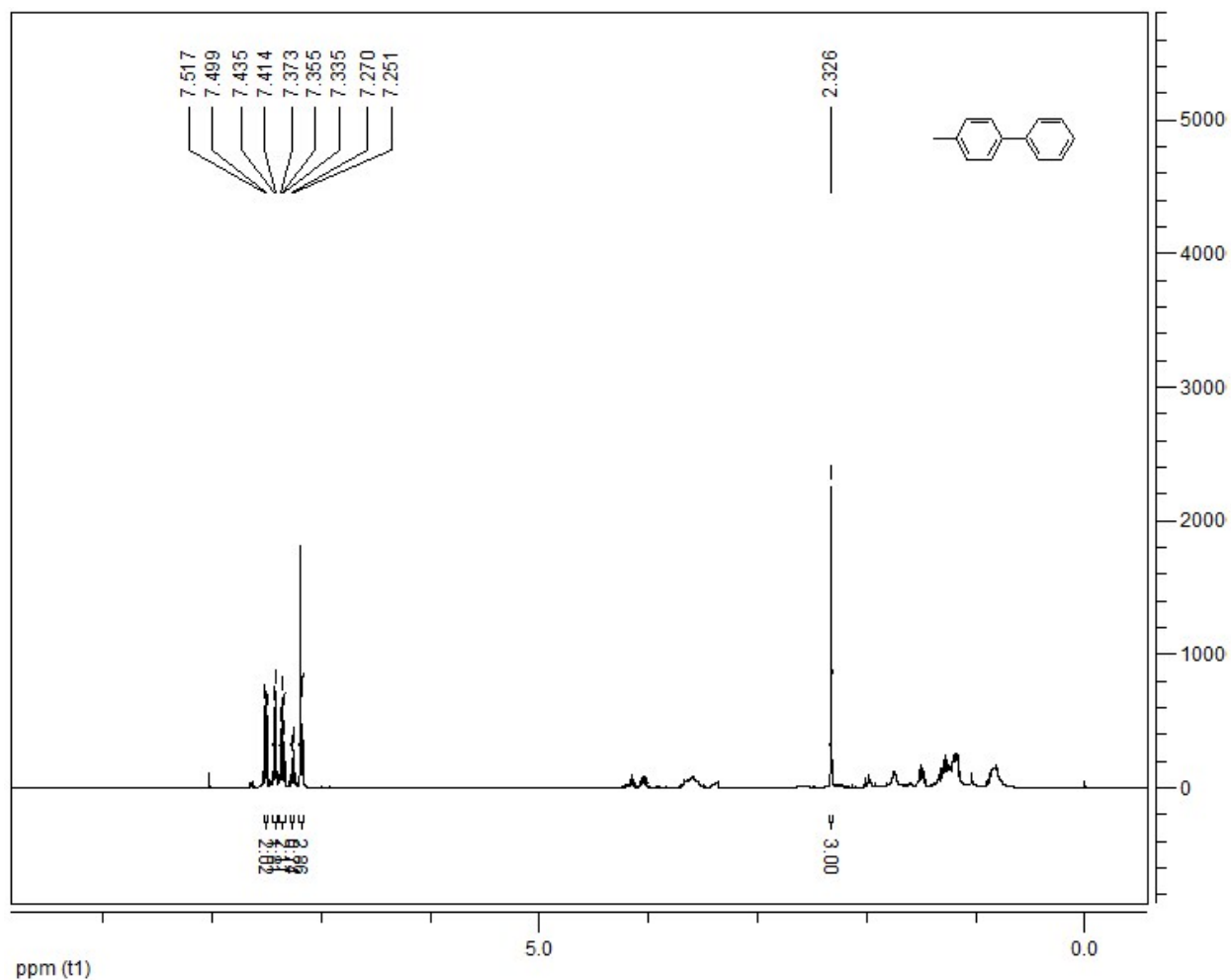
IR (KBr, cm^{-1}): $\nu = 2963, 1724, 1646, 1514, 1346, 851$



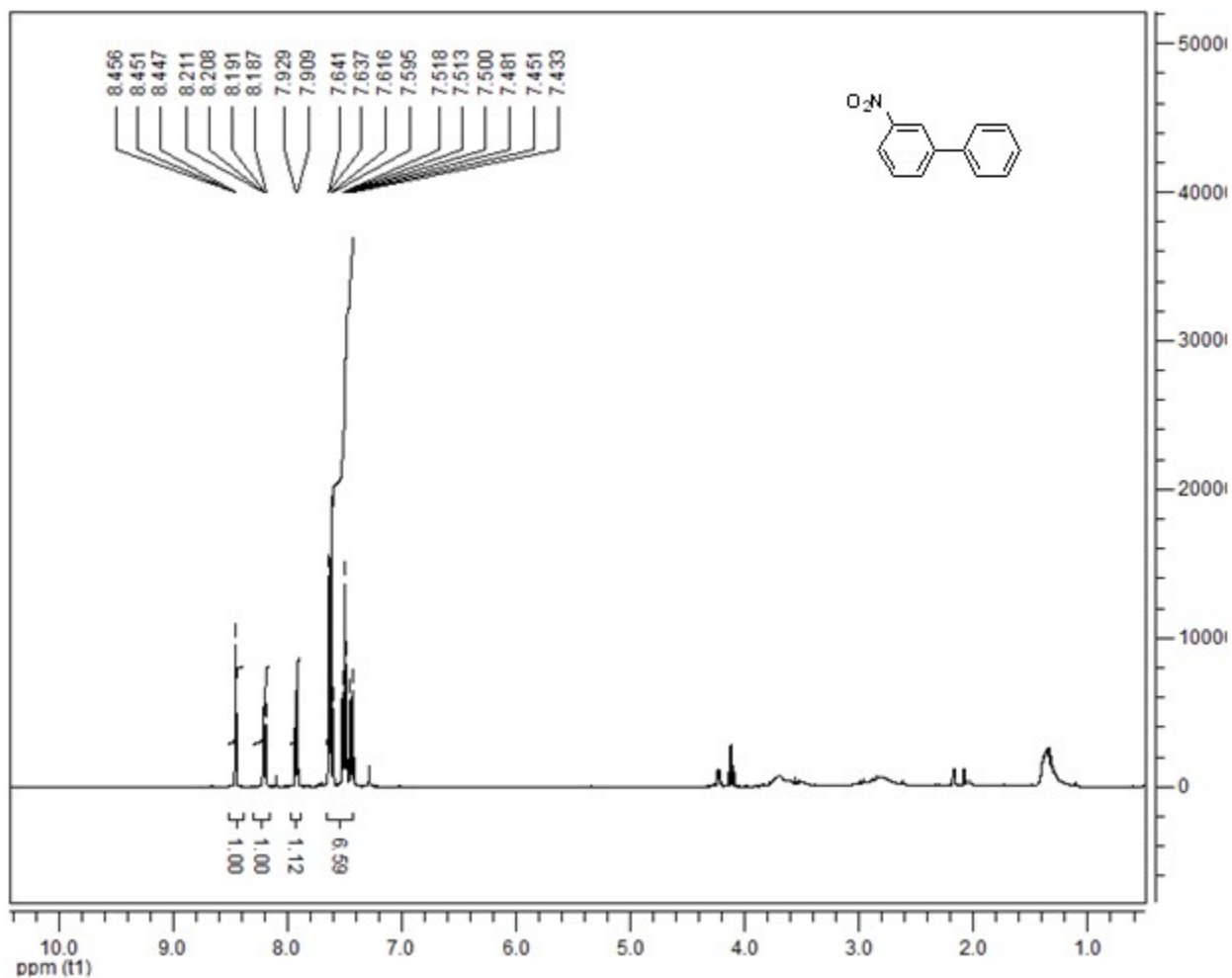
White solid, melting point: 121°C

$^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm, TMS): δ = 8 (d, J =8.4 Hz, 2H), 7.66 (d, J = 8.4 Hz, 2H), 7.59-7.61 (m, 2H), 7.37-7.46 (m, 3H), 2.61(s, 3H)

FT-IR (KBr, cm^{-1}): ν = 2918, 1726, 1669, 1410, 1268, 1120, 768, 690, 591



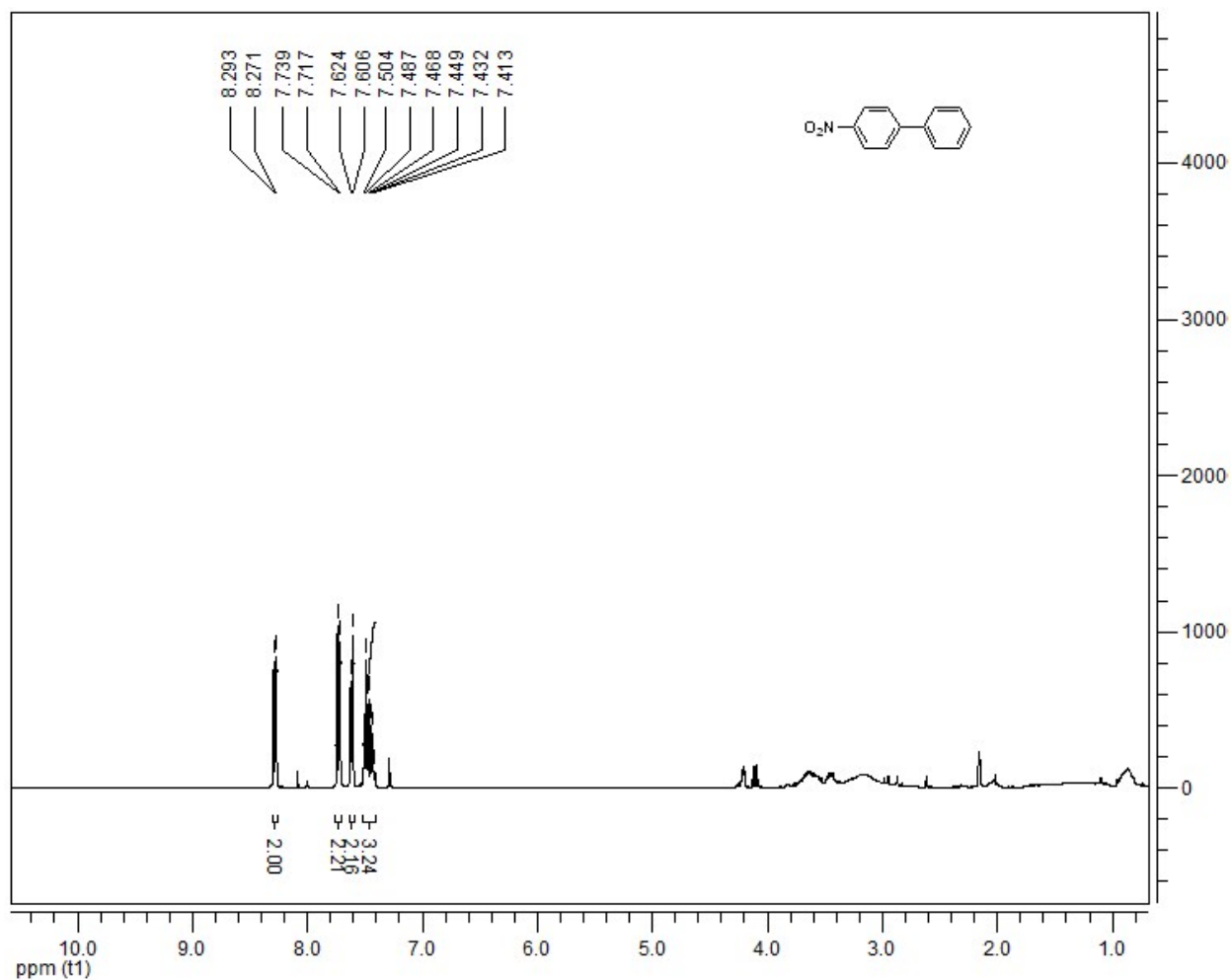
^1H NMR (400 MHz, CDCl_3 , ppm, TMS): $\delta = 7.51$ (m, 4H), 7.42 (d, $J = 7.5$ Hz, 2H), 7.35 (t, $J = 8$ Hz, $J = 7.2$, 1H), 7.26 (m, 2H), 2.32 (s, 3H)



White solid, melting point: 60-61°C

$^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm, TMS): $\delta = 8.45$ (s, 1H), 8.19 (dd, $J = 8/1$, $J = 0/89$, 1H), 7.91(d, $J=8$ Hz, 1H), 7.59-7.64 (m, 3H), 7.48-7.51(m, 2H), 7.41-7.45 (m, 1H)

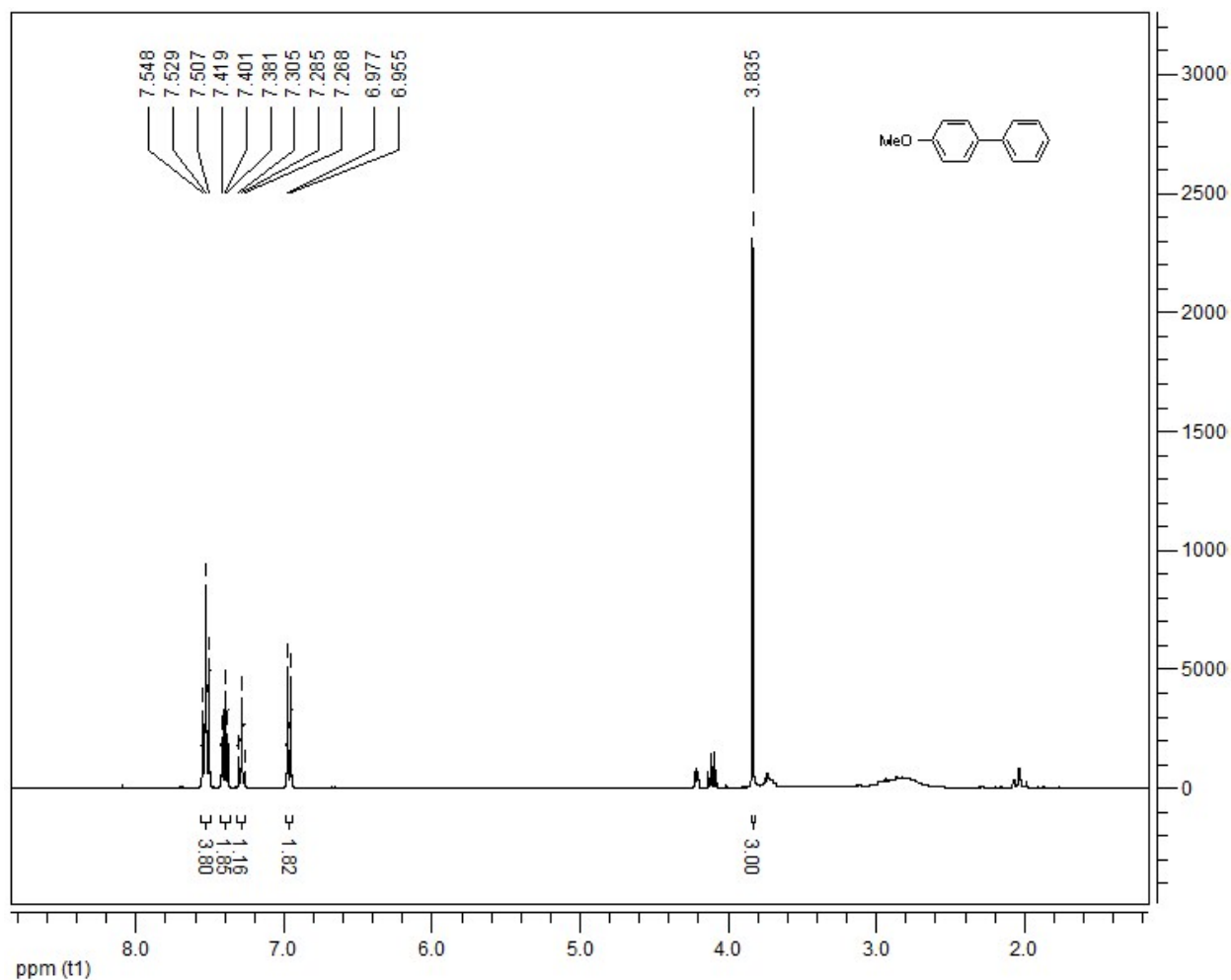
IR (KBr, cm^{-1}): $\nu = 3198, 1583, 1519, 1340, 1293, 1082, 771, 791, 689$



White solid, melting point: 88°C

$^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm, TMS): $\delta = 8.28(\text{d}, J = 8 \text{ Hz}, 2\text{H}), 7.72(\text{d}, J = 8.8 \text{ Hz}, 2\text{H}), 7.60-7.62(\text{m}, 2\text{H}), 7.50-7.43(\text{m}, 3\text{H})$

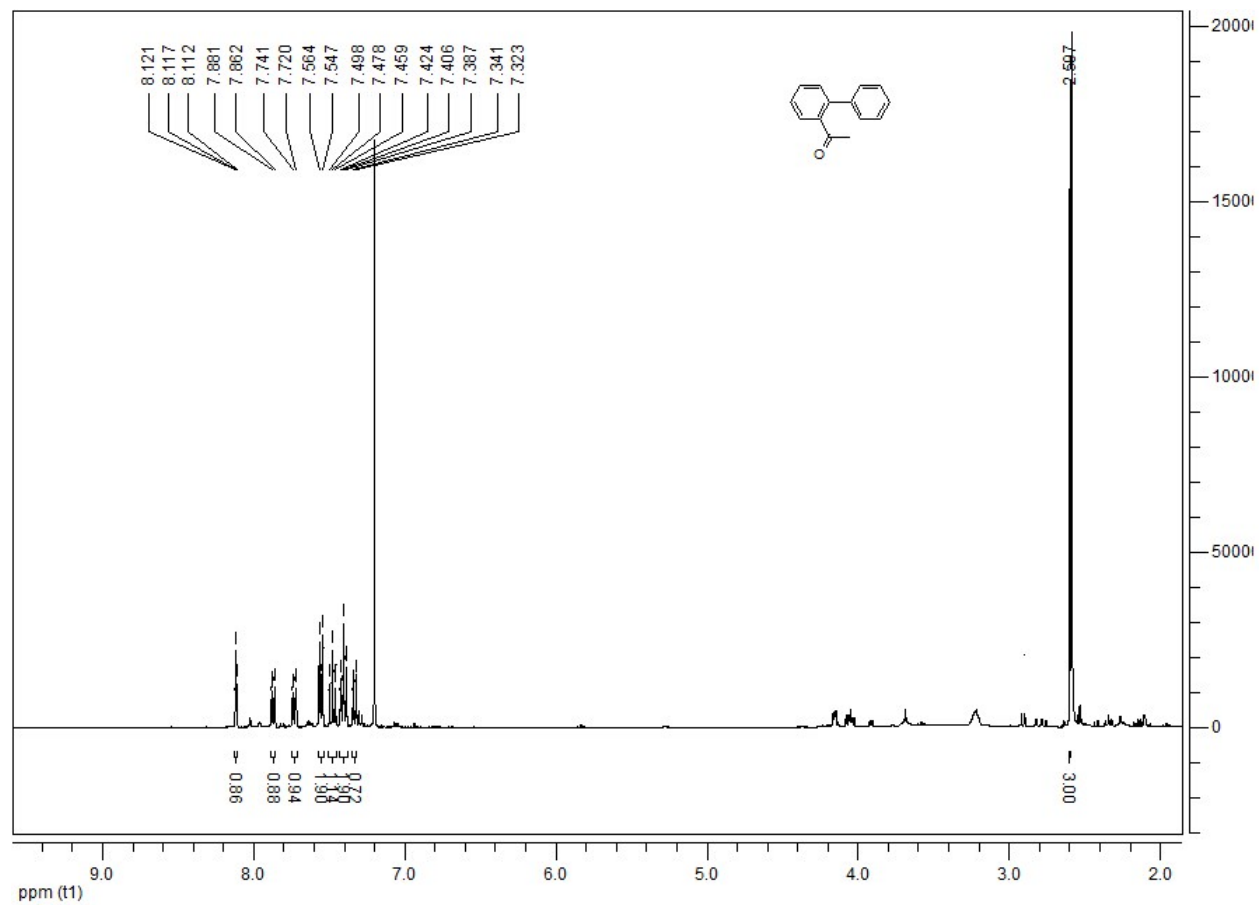
FT-IR (KBr, cm^{-1}): $\nu = 3363, 3242, 1596, 1513, 1351, 853, 739, 711$.



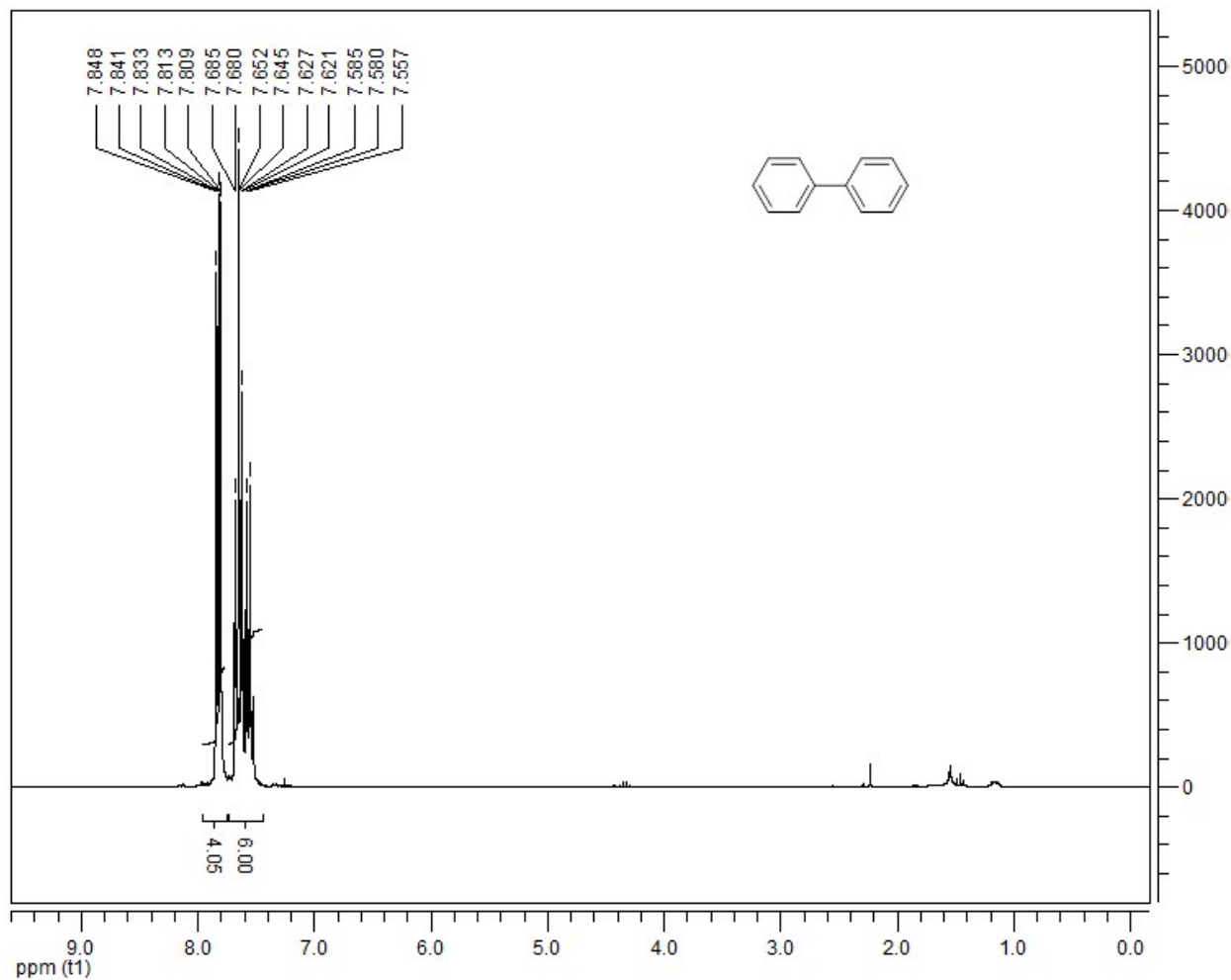
White solid, melting point: 87°C

$^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm, TMS): $\delta = 7.50\text{-}7.54$ (m, 4H), 7.39 (t, $J = 12$ Hz, 2H), 7.28 (t, 1H), 6.96 (d, $J = 8.8$, 2H), 3.83 (s, 3H)

IR (KBr, cm^{-1}): $\nu = 3073, 2963, 2836, 1722, 1578, 1486, 1287, 1247, 1032, 819, 612, 507$



^1H NMR (400 MHz, CDCl_3 , ppm, TMS): δ = 8.11(t, J =1.6 Hz, J = 2Hz, 1H), 7.87(d, J =7.6 Hz, 1H), 7.73(d, J =8.4Hz, 1H), 7.55(d, J =6.8Hz, 2H), 7.48(t, J =8Hz, J =7.6Hz, 1H), 7.40(t, J =7.2Hz, J =7.6 Hz, 2H), 7.33(d, J =7.2, 1H)



White solid, melting point: 72°C

^1H NMR (400 MHz, CDCl_3 , ppm, TMS): δ = 7.84-7.80 (m, 4H), 7.55-7.68 (m, 6H)

IR (KBr, cm^{-1}): ν = 1602, 1440, 1368, 1345, 1306, 1088, 728, 690, 578.