Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Material

Pd-doped SiO_2 nanoparticles: An efficient recyclable catalyst for Suzuki, Heck and Sonogashira reactions

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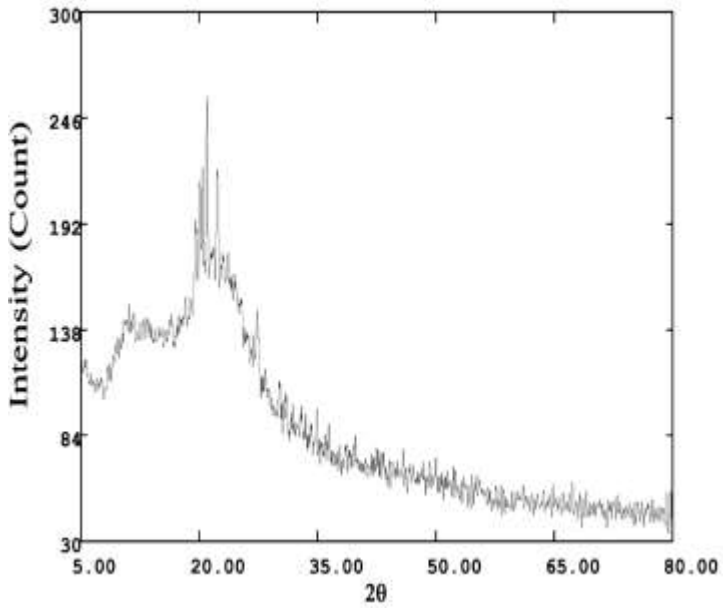

Figure S1 Wide angle powder XRD pattern of Pd/SiO_2

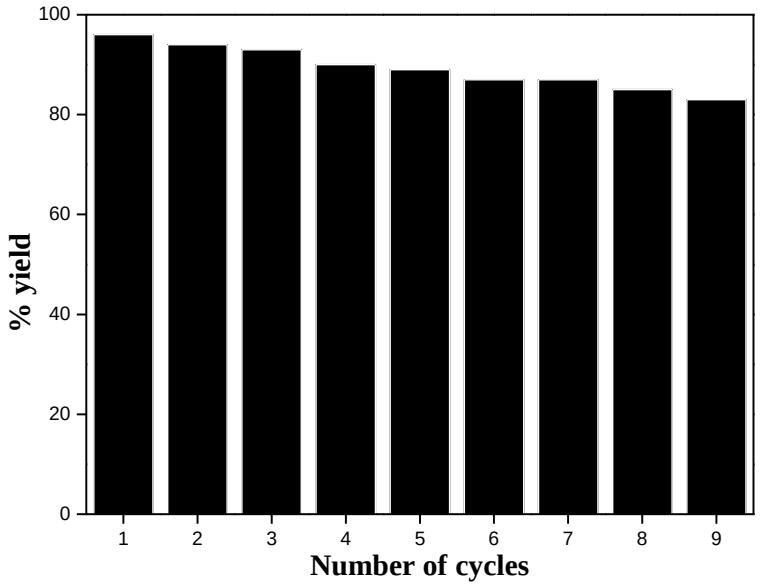

Figure S2 Reusability Graph of Pd/SiO_2 for Suzuki Coupling reaction of *p*-bromoacetophenone with phenyl boronic acid

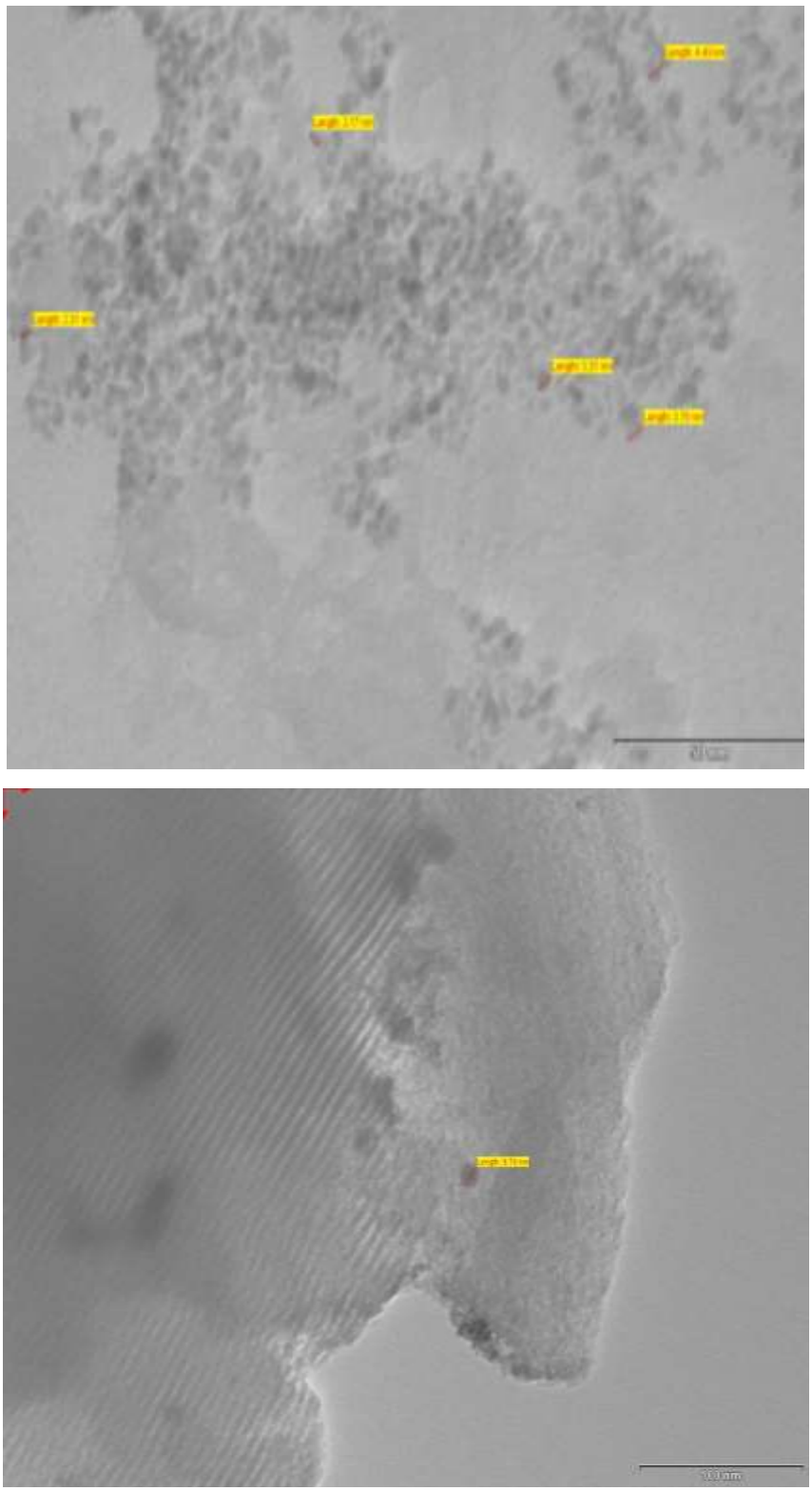

Figure S3 TEM images of Pd/SiO_2 mesoporous materials (magnification of Fig. 3)

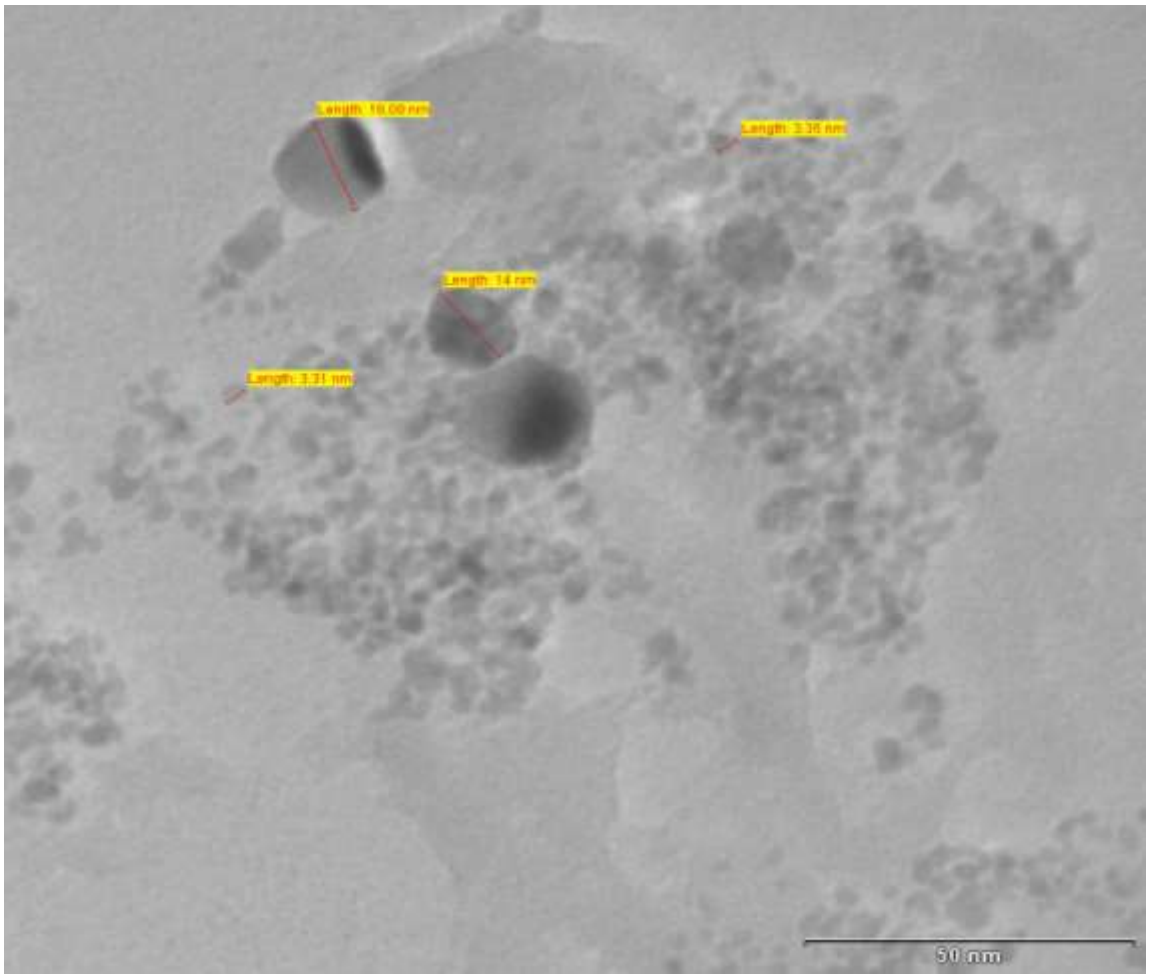

Figure S4 TEM micrographs of reused Pd doped silica mesoporous materials

Characterization of coupling products

Entry	^{1}H NMR Spectral data's
Figure S5	^{1}H NMR ($CDCl_3$ δ/ppm): 2.19 (3H, Singlet, -CH_3), 7.35–7.47 (2H, Multiplet, -C*H*), 7.51–7.59 (2H, Multiplet, -C*H*), 7.61-7.65 (4H, Multiplet, -C*H*), 7.77 (1H, Singlet, -C*H*), 8.28 (1H, Singlet, -N*H*) (Table 3 Entry 1)
Figure S6	^{1}H NMR ($CDCl_3$, δ/ppm): 7.41-7.49 (1H, Triplet, -C*H*), 7.51-7.55 (4H, Multiplet, -C*H*), 7.61-7.63 (1H, Triplet, -C*H*), 7.65-7.69 (2H, Triplet, -C*H*), 7.72–7.74 (2H, Triplet, -C*H*), 7.85-7.87 (2H, Doublet, -C*H*), 7.91–7.93 (2H, Doublet, -C*H*) (Table 3 Entry 3)
Figure S7	^{1}H NMR ($CDCl_3$, δ/ppm): 7.53-7.58 (2H, Triplet, -C*H*), 7.78-7.80 (2H, Multiplet, -C*H*), 7.88-7.99 (5H, Multiplet, -C*H*), 8.01-8.13 (2H, Triplet, -C*H*), 10.11 (1H, Singlet, -C*H*O) (Table 3 Entry 5)
Figure S8	^{1}H NMR ($CDCl_3$, δ/ppm): 1.45 (9H, Singlet, -(CH_3)$_3$), 6.44 (1H, Doublet, =C*H*), 7.57-7.64 (2H, Triplet, -C*H*), 7.80 (1H, Doublet, =C*H*), 8.07-8.10 (2H, Triplet, -C*H*), 11.04 (1H, Singlet, -O*H*) (Table 5 Entry 3)
Figure S9	^{1}H NMR ($CDCl_3$, δ/ppm): 1.49 (9H, Singlet, -(CH_3)$_3$), 3.78 (3H, Singlet, -OCH_3), 6.51 (1H, Doublet, =C*H*), 7.63-7.68 (2H, Triplet, -C*H*), 7.81 (1H, Doublet, =C*H*), 8.08-8.14 (2H, Triplet, -C*H*) (Table 5 Entry 6)
Figure S10	^{1}H NMR ($CDCl_3$, δ/ppm): 6.90 (2H, Doublet, -C*H*=C*H*), 7.38-7.59 (4H, Triplet, -C*H*), 7.71-7.79 (2H, Triplet, -C*H*), 7.80-7.93 (4H, Triplet, -C*H*) (Table 5 Entry 9)
Figure S11	^{1}H NMR ($CDCl_3$, δ/ppm): 2.62 (3H, Singlet, -OCH_3), 6.90-7.28 (3H, Triplet, -C*H*), 7.31-7.48 (2H, Triplet, -C*H*), 7.60-7.64 (2H, Triplet, -C*H*), 7.82-7.84 (2H, Triplet, -C*H*) (Table 6 Entry 1)
Figure S12	^{1}H NMR ($CDCl_3$, δ/ppm): 7.43-7.54 (3H, Triplet, -C*H*), 7.56-7.63 (4H, Triplet, -C*H*), 7.65-7.81 (2H, Triplet, -C*H*), 9.97 (1H, Singlet, -C*H*O)(Table 6 Entry 4)
Figure S13	^{1}H NMR ($CDCl_3$, δ/ppm): 7.19-7.21 (3H, Triplet, -C*H*), 7.24-7.26 (2H, Triplet, -C*H*), 7.55-7.63 (2H, Triplet, -C*H*), 7.70-7.79 (2H, Triplet, -C*H*)(Table 6 Entry 6)

Suzuki Coupling products

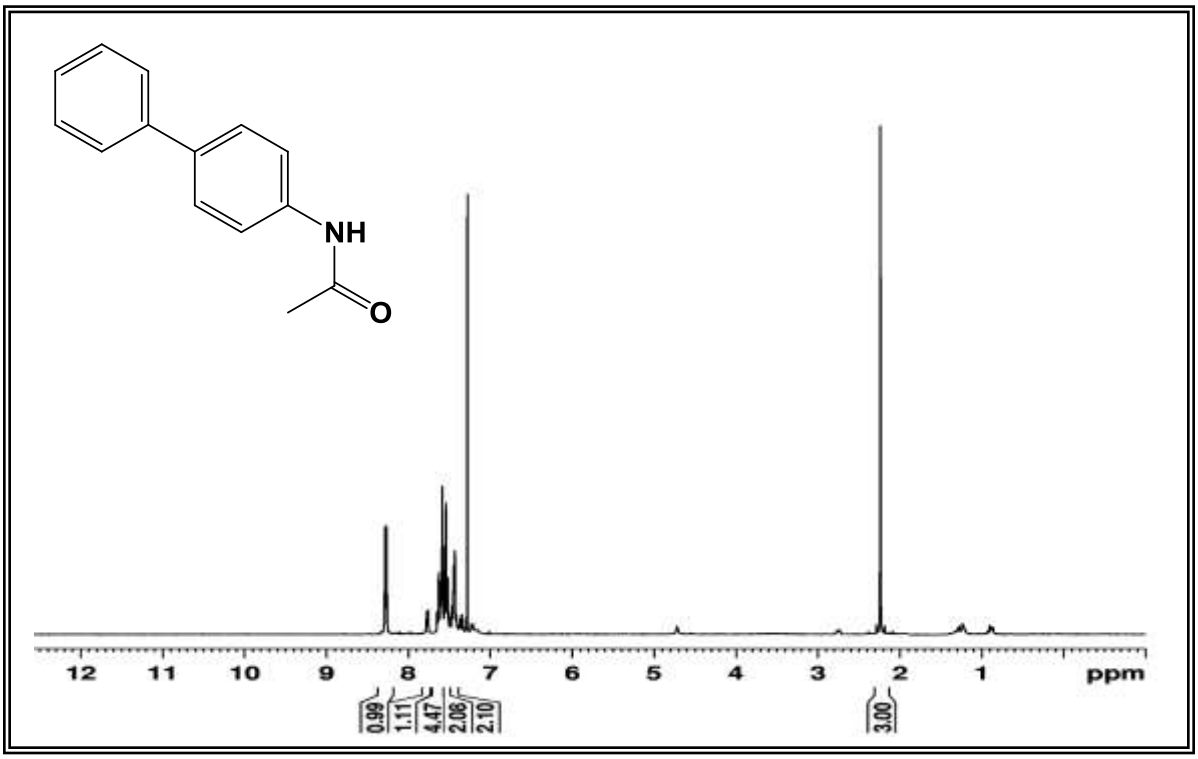

Figure S5 ^{1}H-NMR of N-(biphenyl-4-yl)acetamide

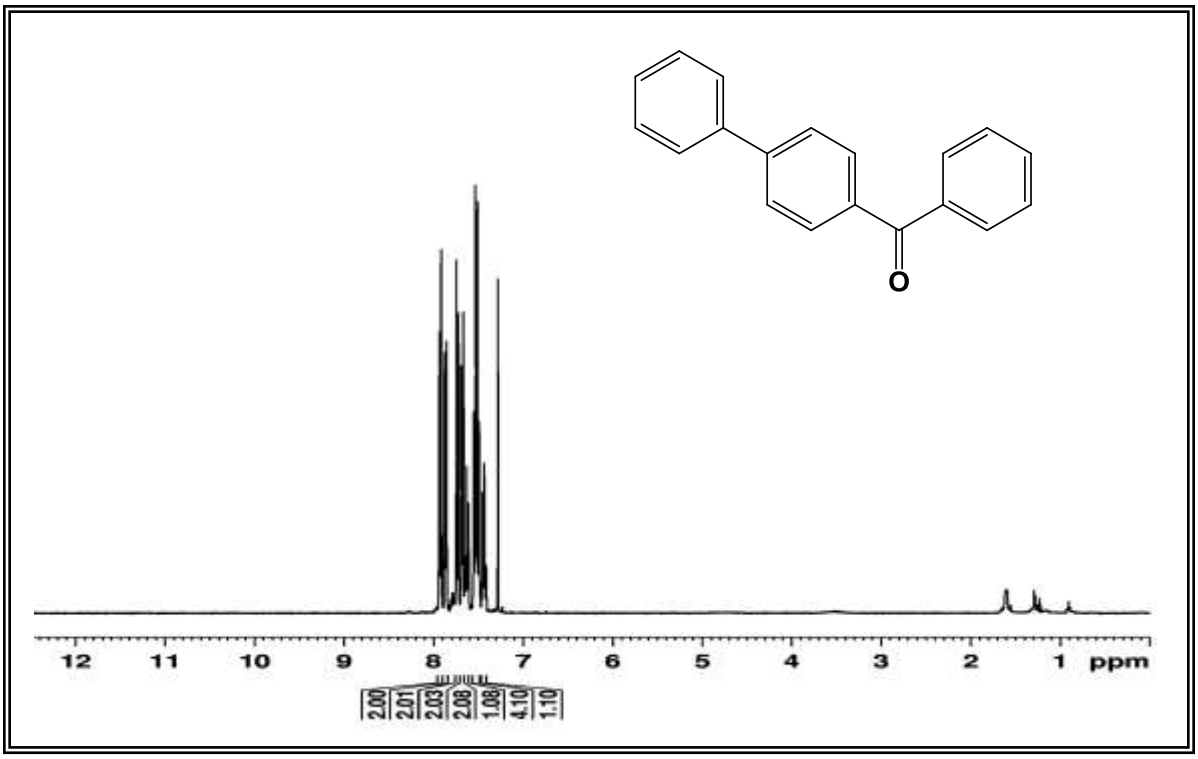

Figure S6 ^{1}H-NMR of 4-(naphthalen-2-yl)benzaldehyde

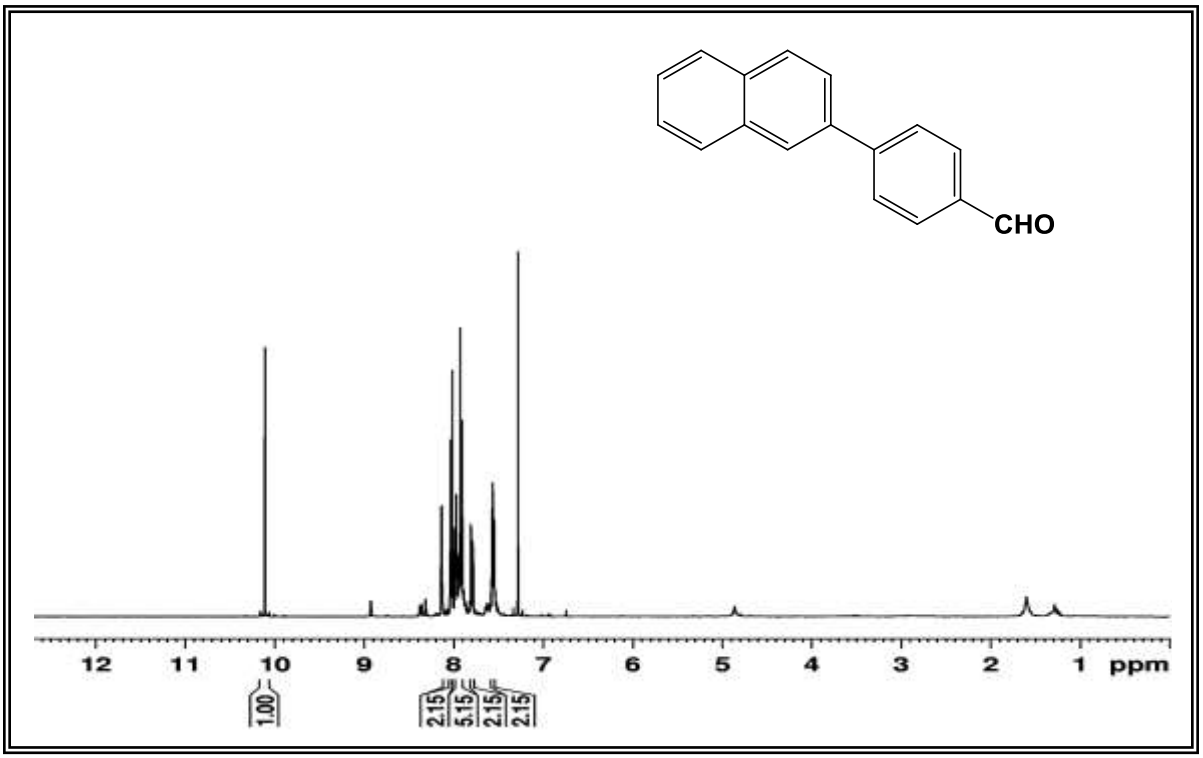

Figure S7 ^{1}H-NMR of 4-(naphthalen-2-yl)benzaldehyde

Heck Coupling products

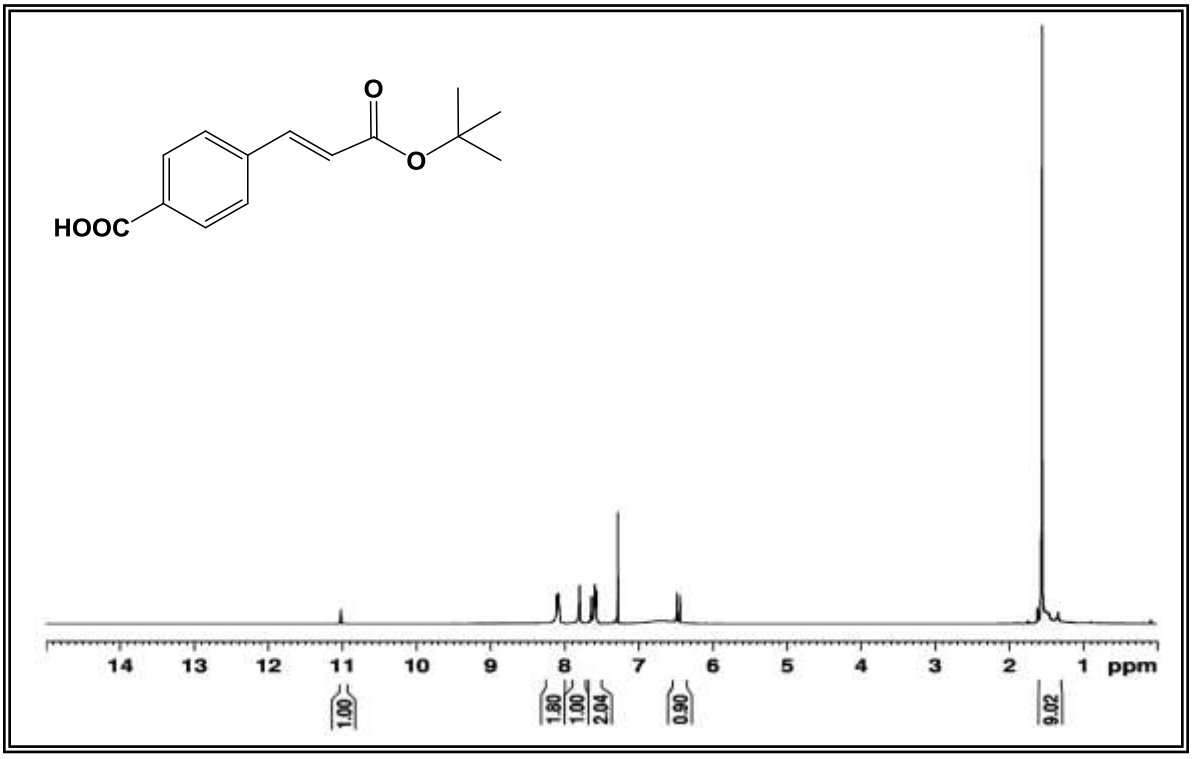

Figure S8 ^{1}H-NMR of (E)-4-(3-tert-butoxy-3-oxoprop-1-enyl)benzoic acid

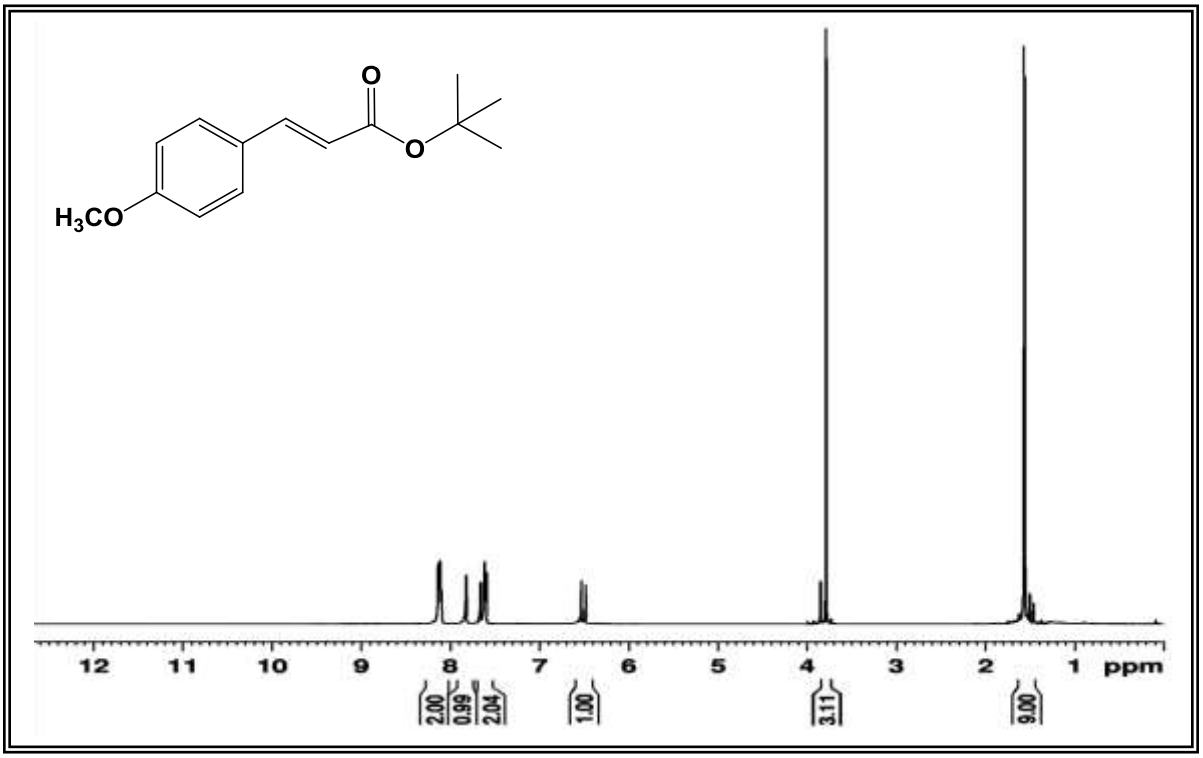

Figure S9 ^{1}H-NMR of (E)-tert-butyl 3-(4-methoxyphenyl)acrylates

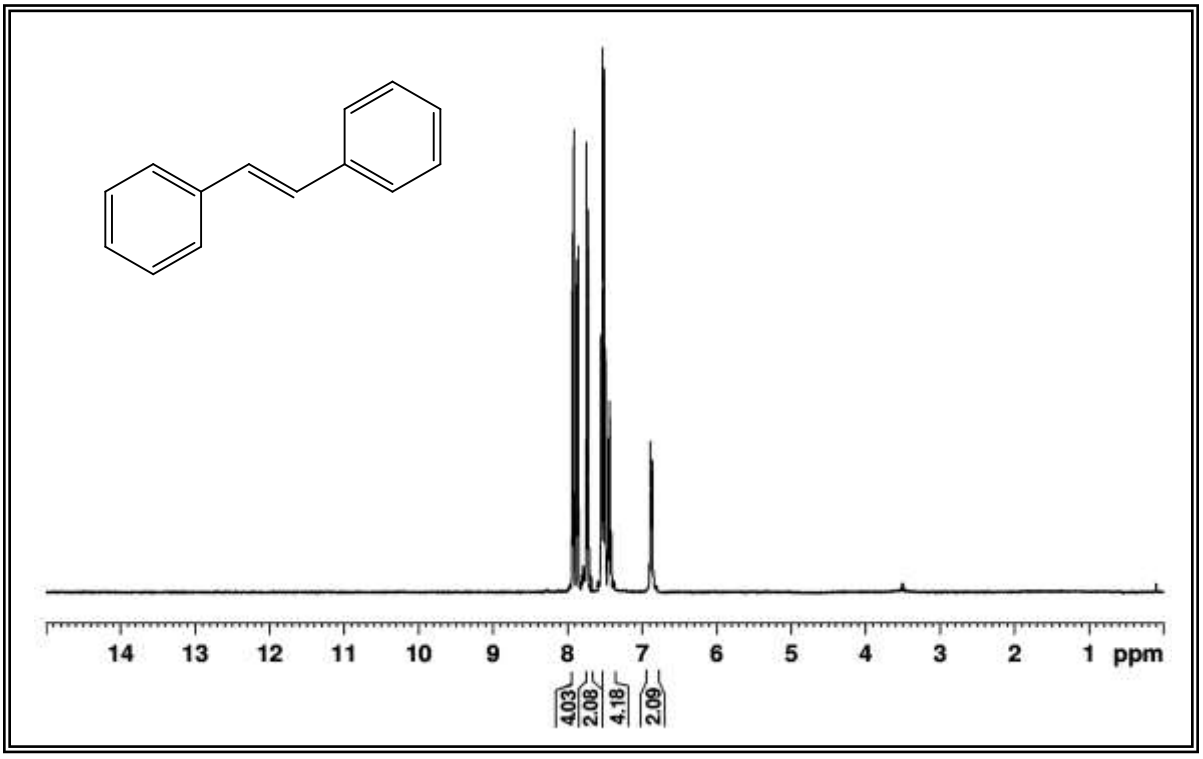

Figure S10 ^{1}H-NMR of (E)-1,2-diphenylethene

Sonogashira Coupling products

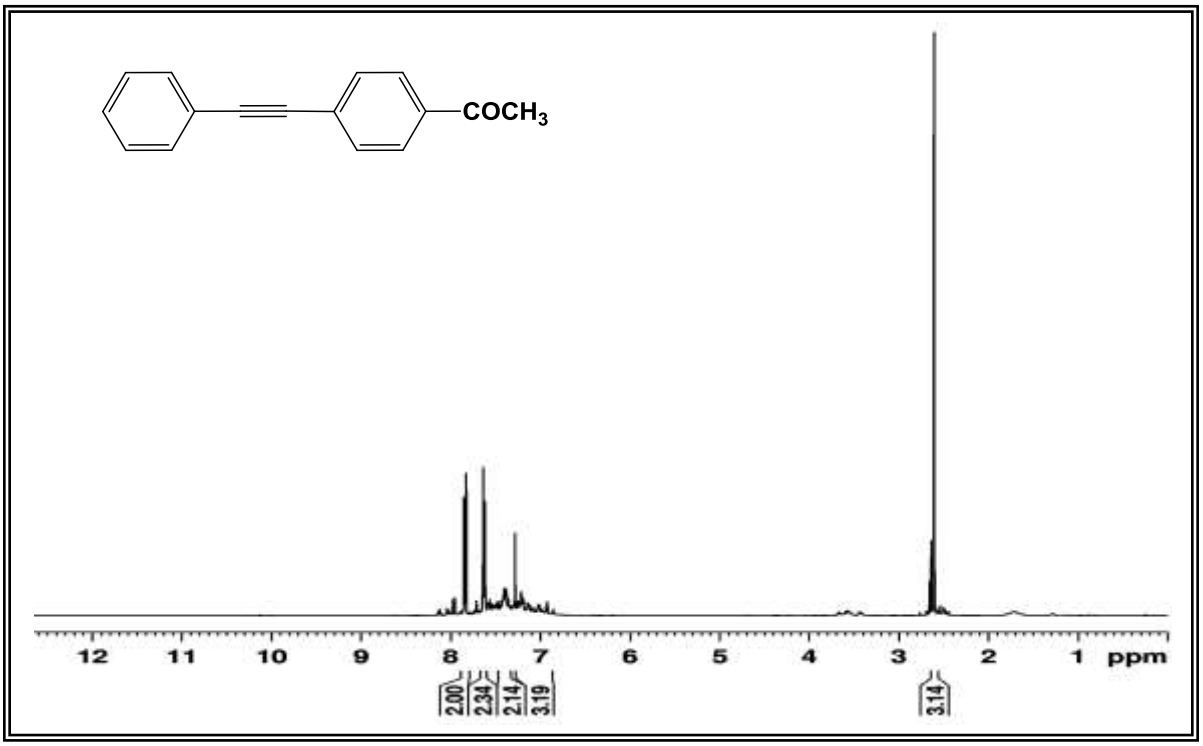

Figure S11 ^{1}H-NMR of 1-(4-(phenylethynyl)phenyl)ethanone

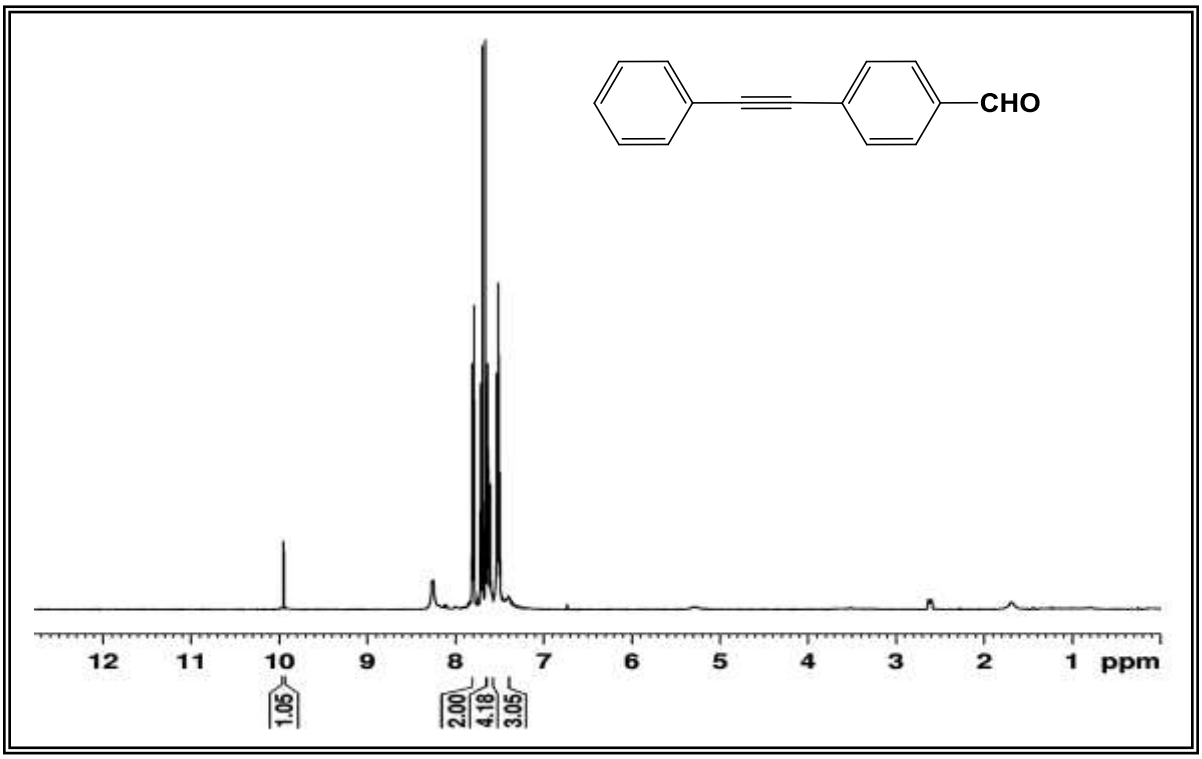

Figure S12 ^{1}H-NMR of 4-(phenylethynyl)benzaldehyde

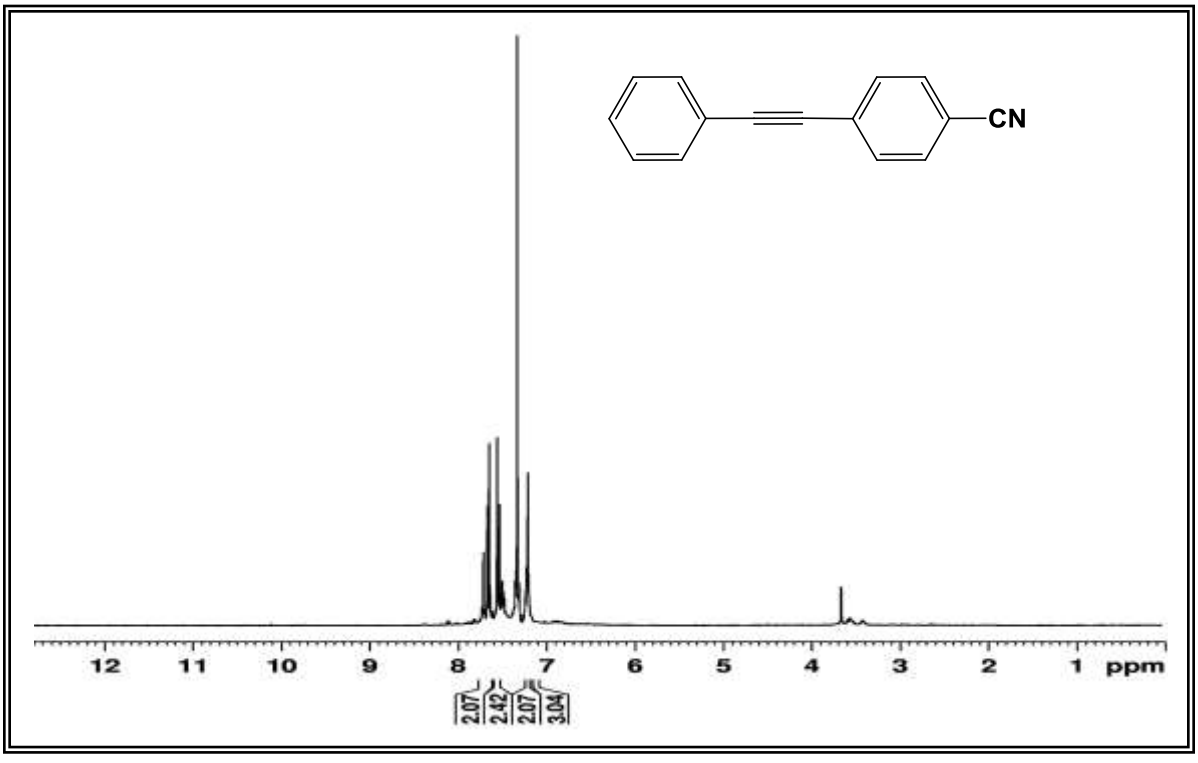

Figure S13 ^{1}H-NMR of 4-(phenylethynyl)benzonitrile