Supporting Information

Synthesis and characterization of a supported Pd complex on volcanic pumice laminates textured by cellulose for facilitating Suzuki−Miyaura cross-coupling reactions

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Table S1. A brief list of the applied materials and equipment.

Material / instrument	Brand
Pumice powder	Was purchased from a market in Tehran, IRAN
Hydrochloric acid	Merck, 37%
Cellulose powder	Sigma Aldrich (fibers, medium)
Palladium chloride	Sigma Aldrich (99%)
Potassium hydroxide	Merck, pellets for analysis
Potassium carbonate	Sigma Aldrich (ACS reagent)
Sodium borohydride	Sigma Aldrich (≥98.0%)
Triphenylphosphine	Sigma Aldrich (for synthesis)
Solvents	Merck
Aryl halide derivatives	Sigma Aldrich
Phenylboronic acid	Sigma Aldrich (95.0%)
Silica gel	Sigma Aldrich (for column chromatography, 60)
Ball mill	Retsch PM-100, Retsch GmbH & amp, Germany
Furnace	Muffle Furnace (Omron E5CC)
Heater-stirrer	HEIDOLPH Magnetic Stirrer with Heating
Ultrasound cleaner bath	KQ-250 DE
Oven	Memmert (UN30)
Crucible	EISCO (porcelain)
Glassware	Isolab
TLC plate	Merck (0.2 mm, 60 F254 aluminium sheets)
FT-IR spectrometer	Shimadzu IR-470 (KBr pellets)
EDX spectrometer	Numerix DXP-X10P
VSM	Lakeshore 7407
TGA	STA504
FESEM	Sigma-Zeiss microscope with attached camera
TEM	Philips CM-12
BET	Micromeritics ASAP 2010
XPS	ESCALAB Xiþ, and Thermo Scientific
Melting point measurement apparatus	Capillary melting point
NMR spectrometer	Bruker FT-NMR

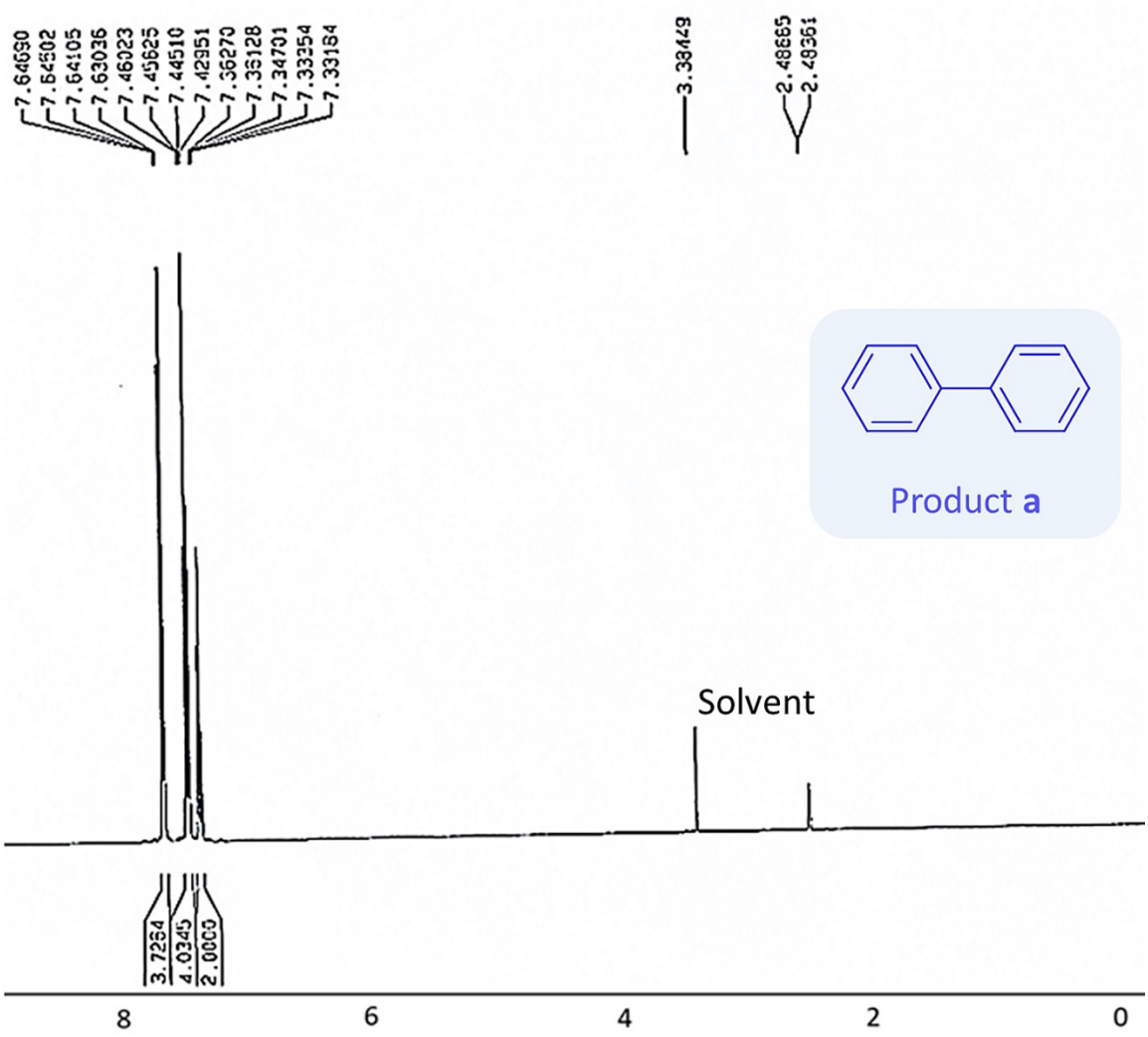

Figure S1. ^{1}H-NMR spectrum of biphenyl (**a**).

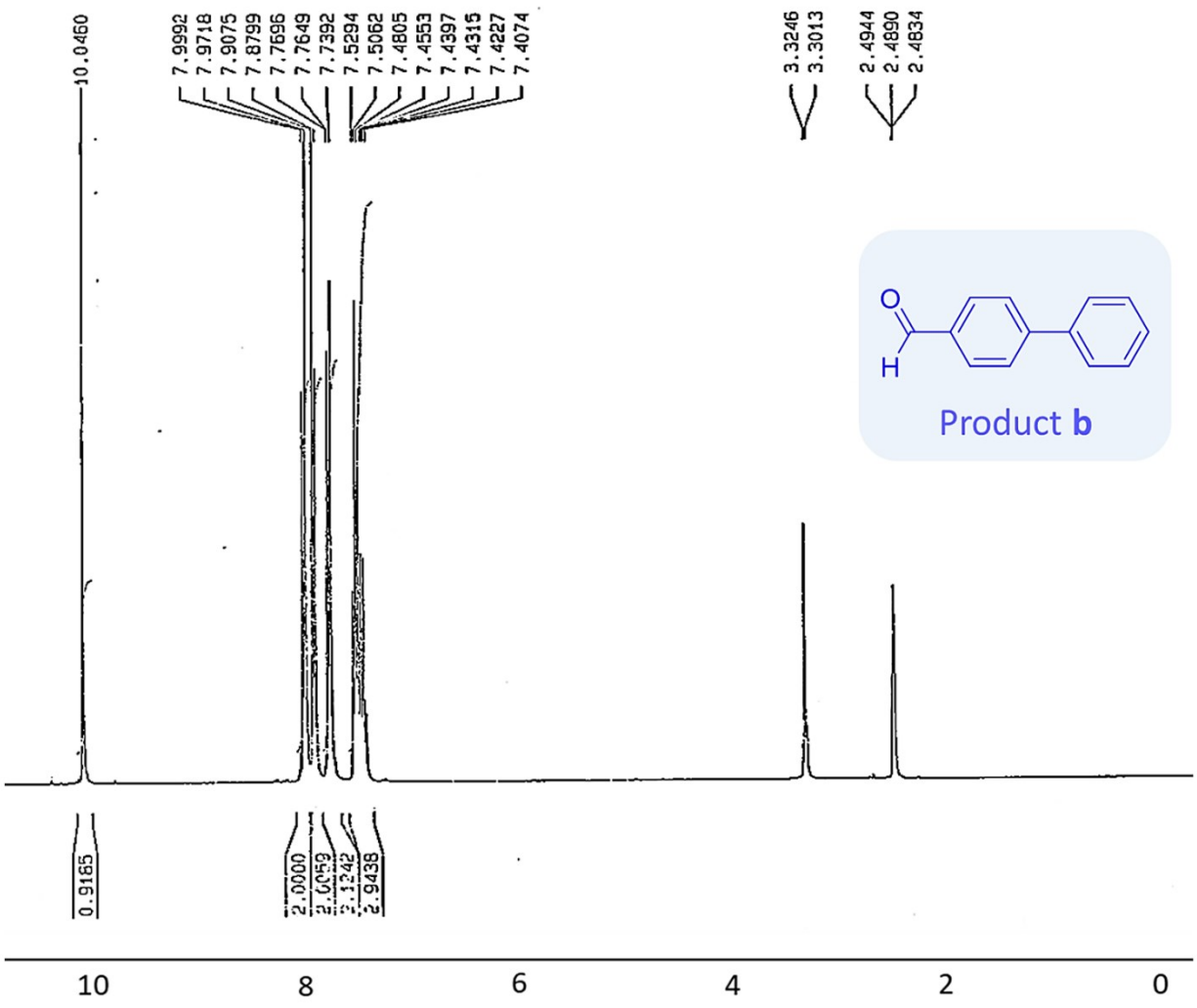

Figure S2. ^{1}H-NMR spectrum of 4-carbaldehyde-biphenyl (**b**).

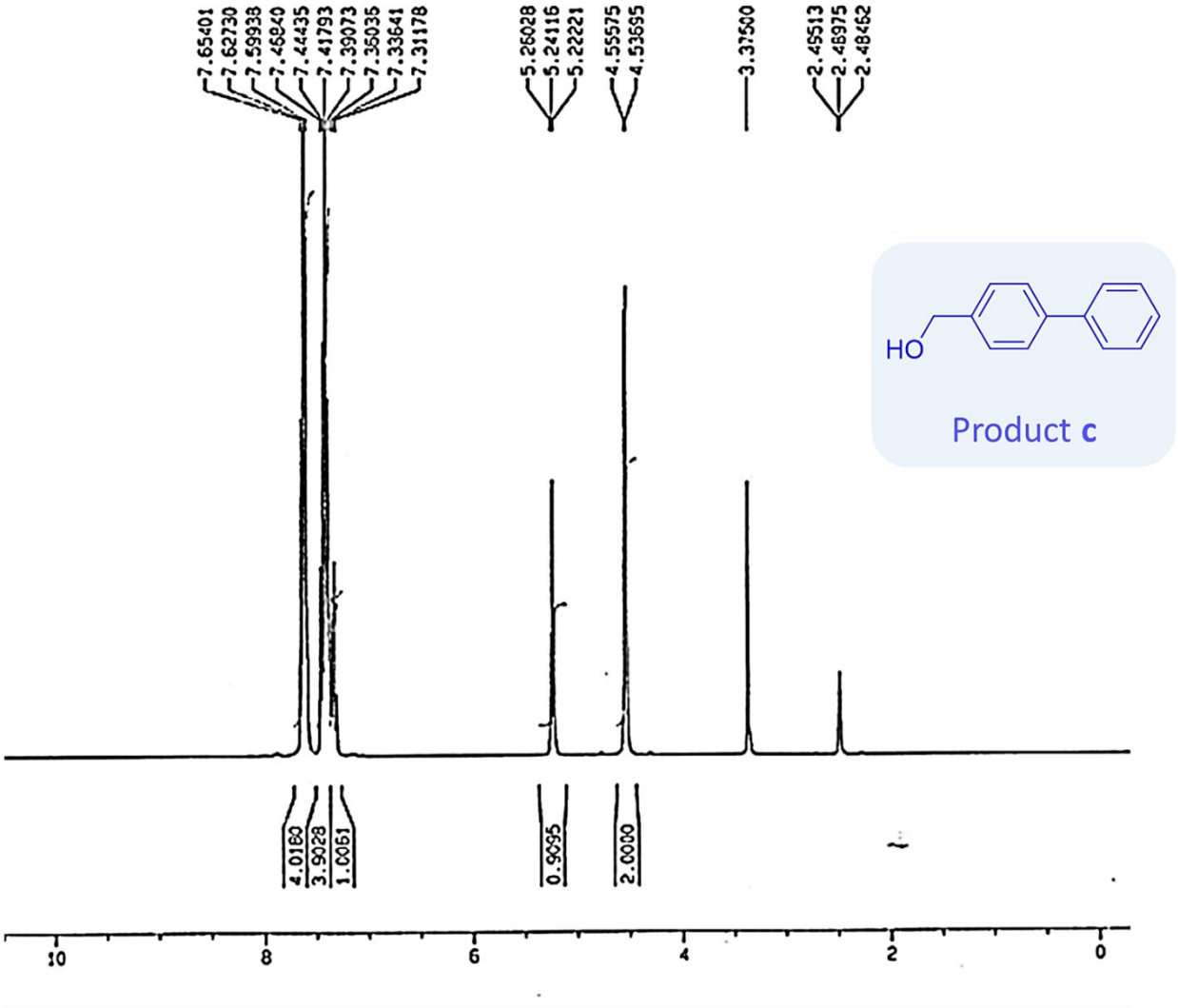

Figure S3. ^{1}H-NMR spectrum of 4-methanol-biphenyl (**c**).

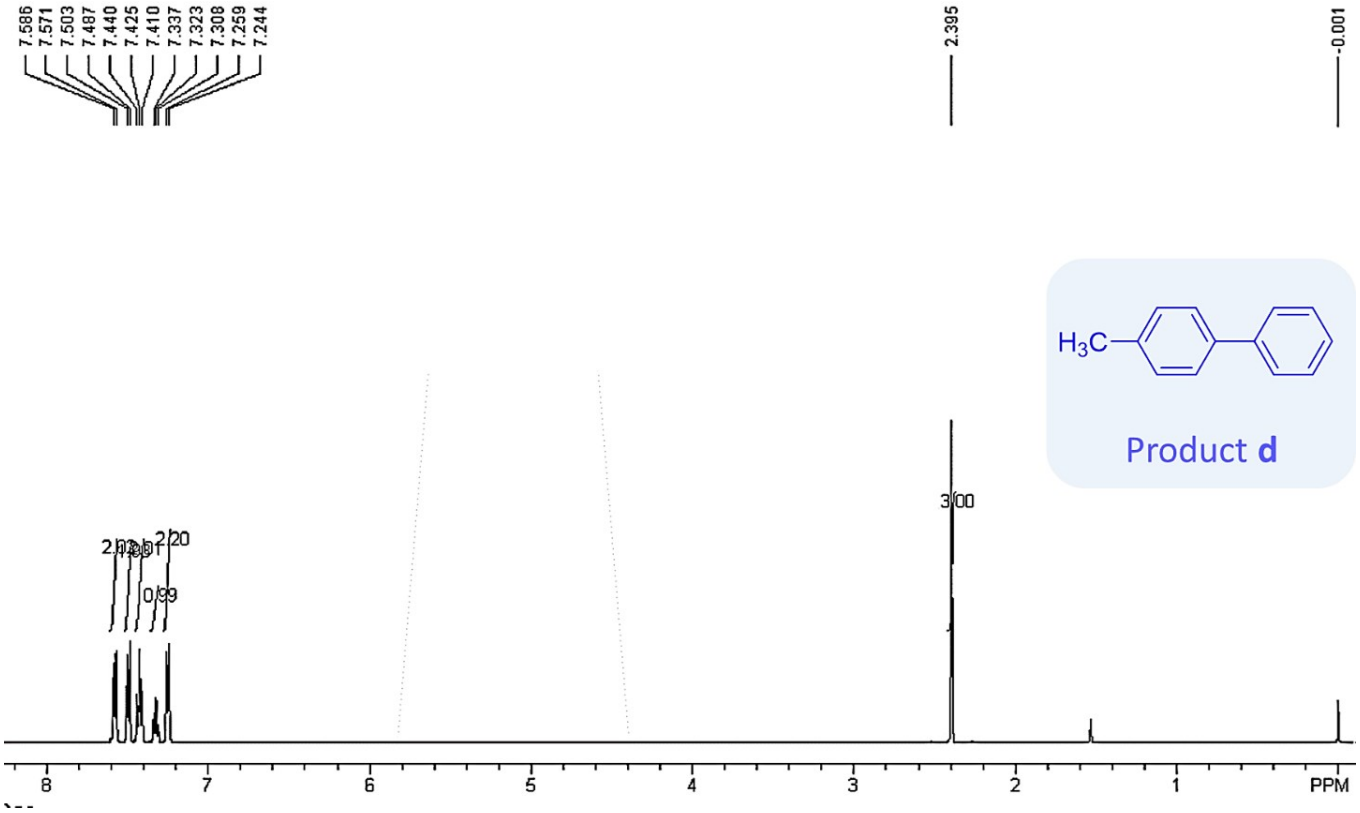

Figure S4. ^{1}H-NMR spectrum of 4-methyl-biphenyl (**d**).

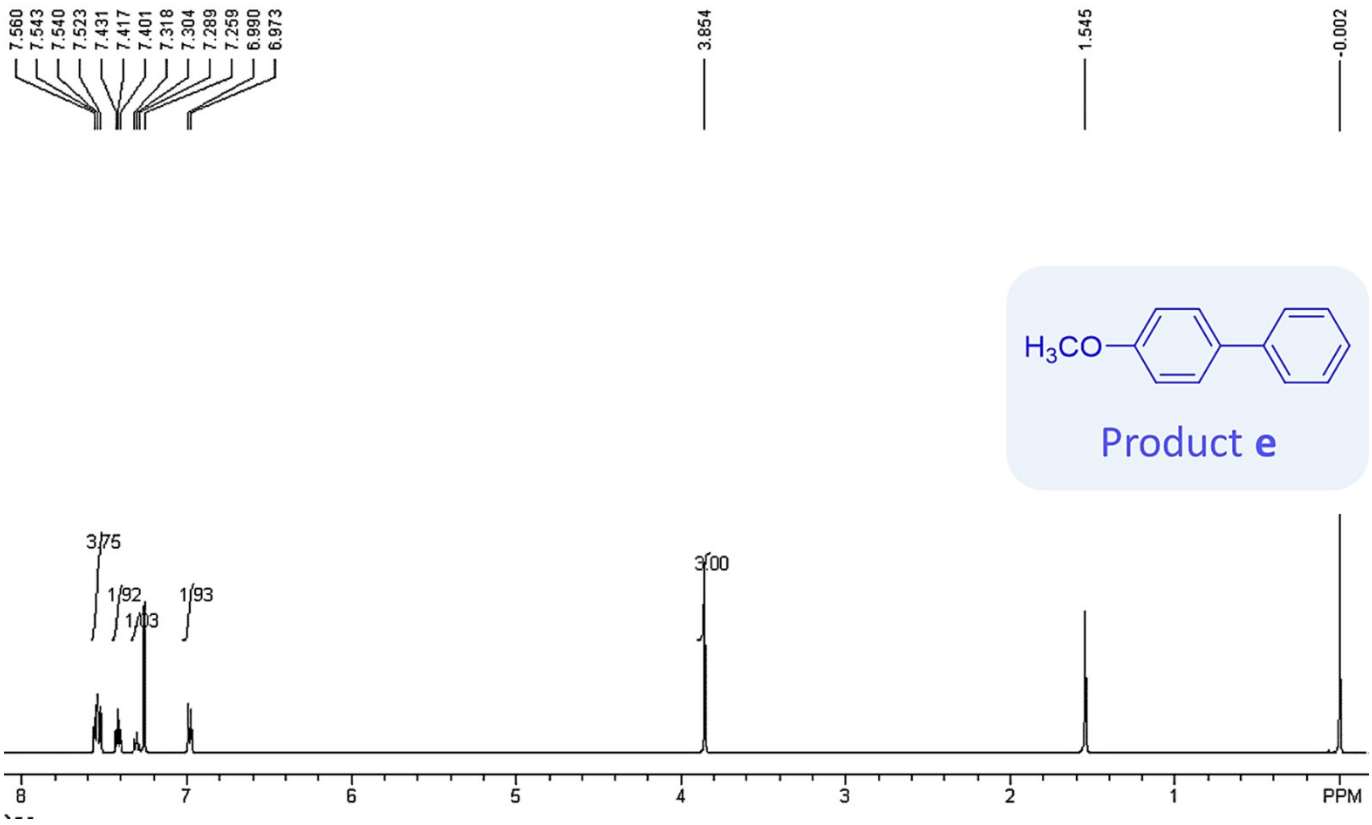

Figure S5. ^{1}H-NMR spectrum of 4-methoxy-biphenyl (**e**).

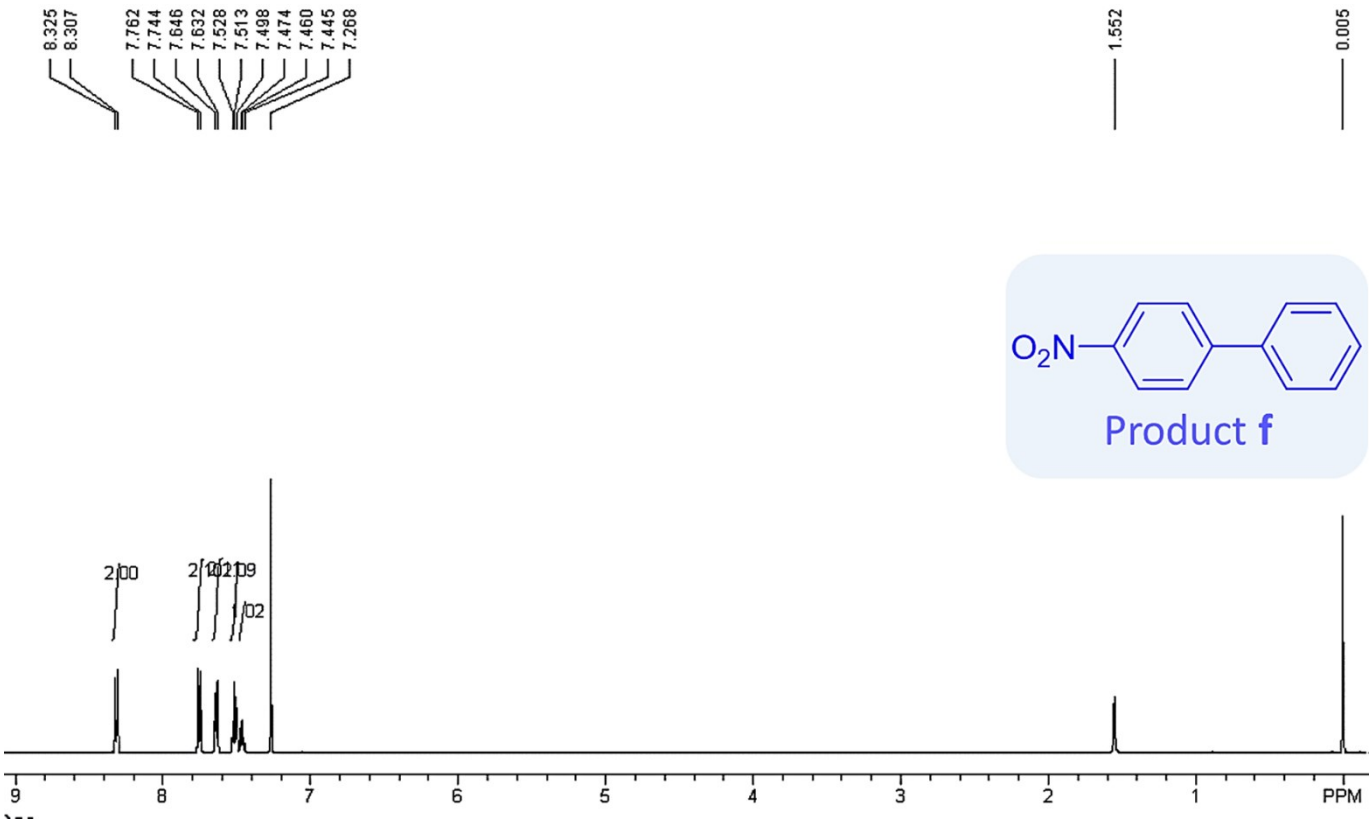

Figure S6. ^{1}H-NMR spectrum of 4-nitro-biphenyl (**f**).

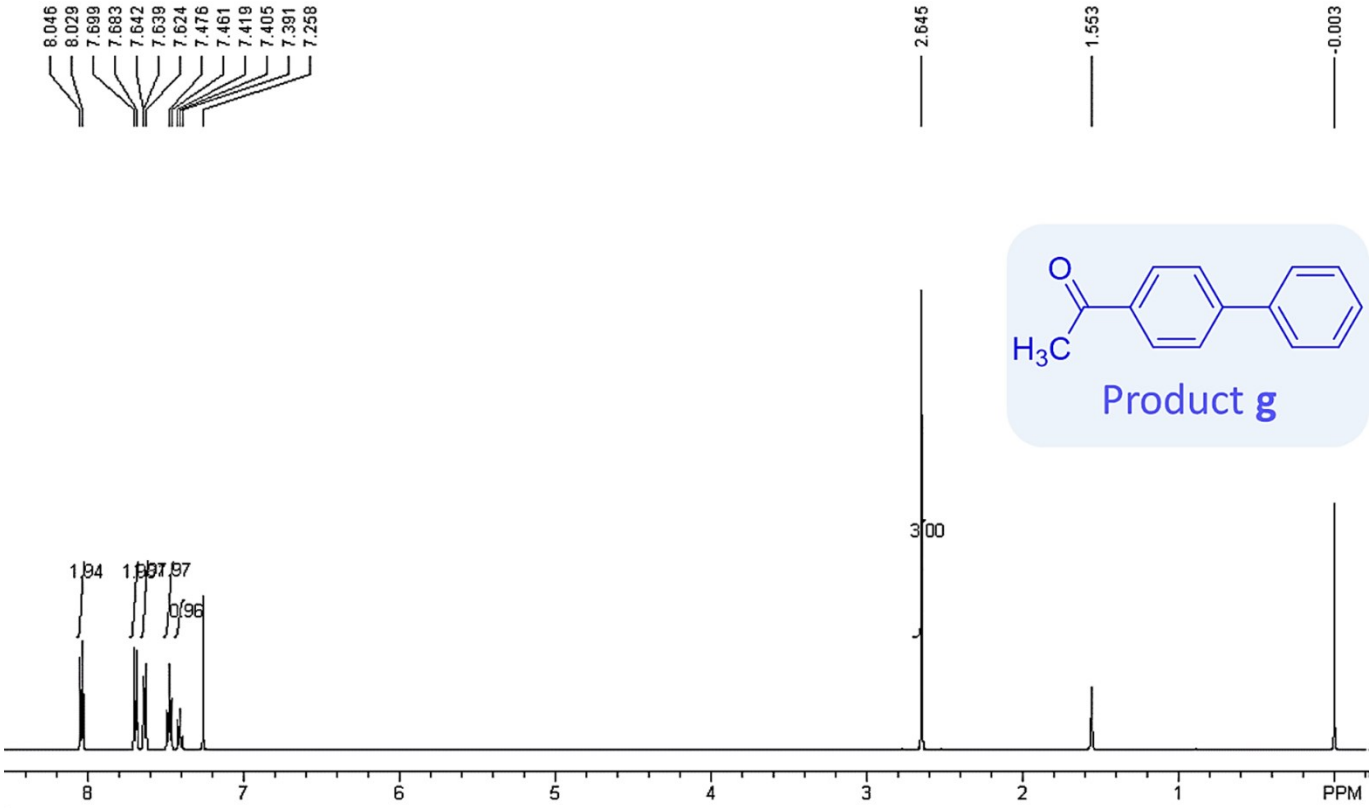

Figure S7. ^{1}H-NMR spectrum of 1-biphenyl-4-yl-ethanone (**g**).

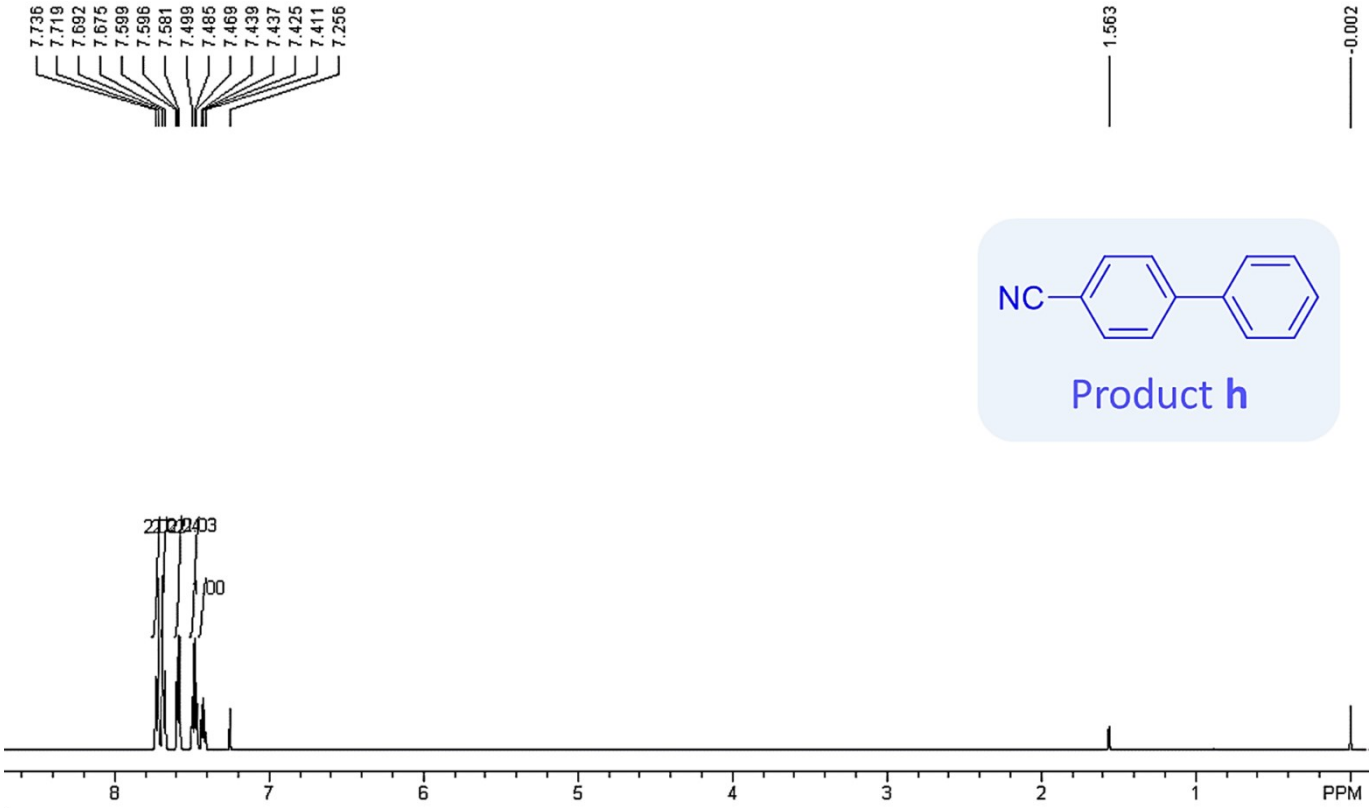

Figure S8. ^{1}H-NMR spectrum of biphenyl-4-carbonitrile (**h**).

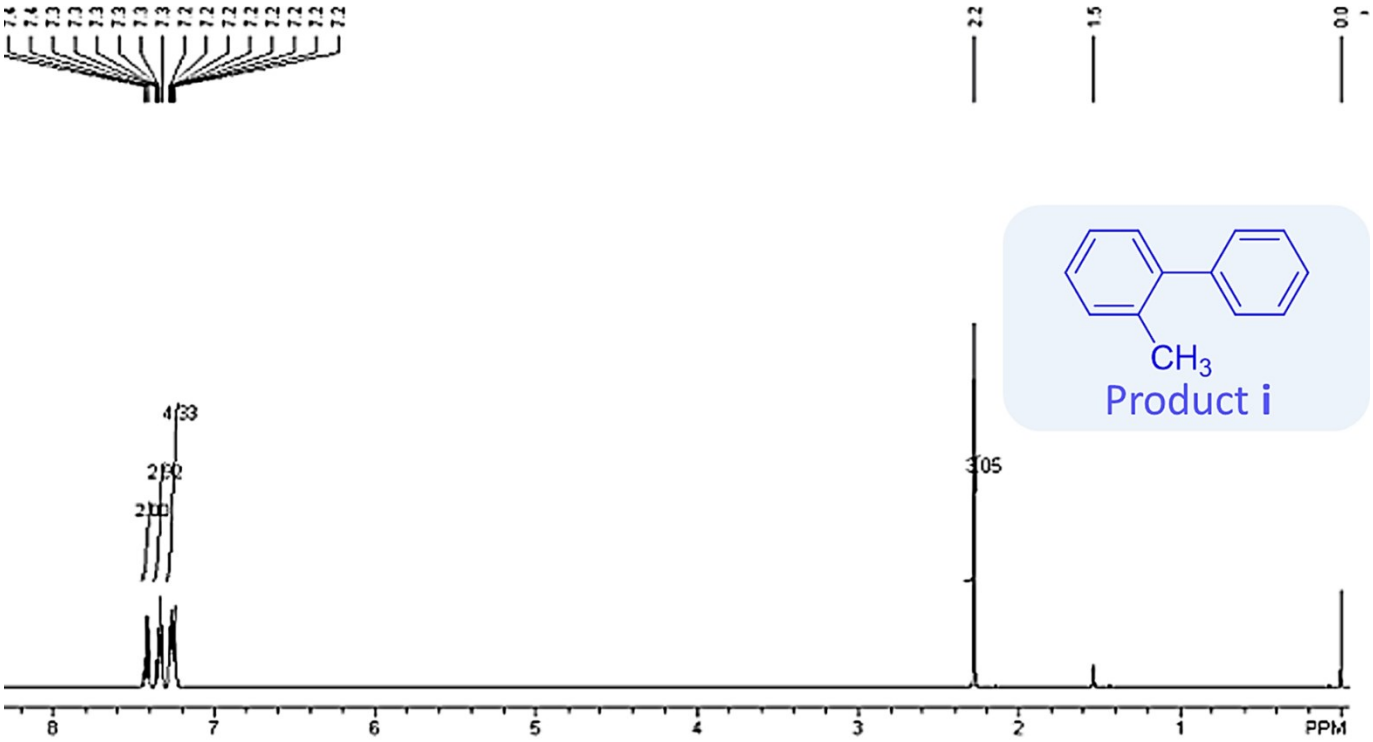

Figure S9. ^{1}H-NMR spectrum of 2-methyl-biphenyl (**i**).

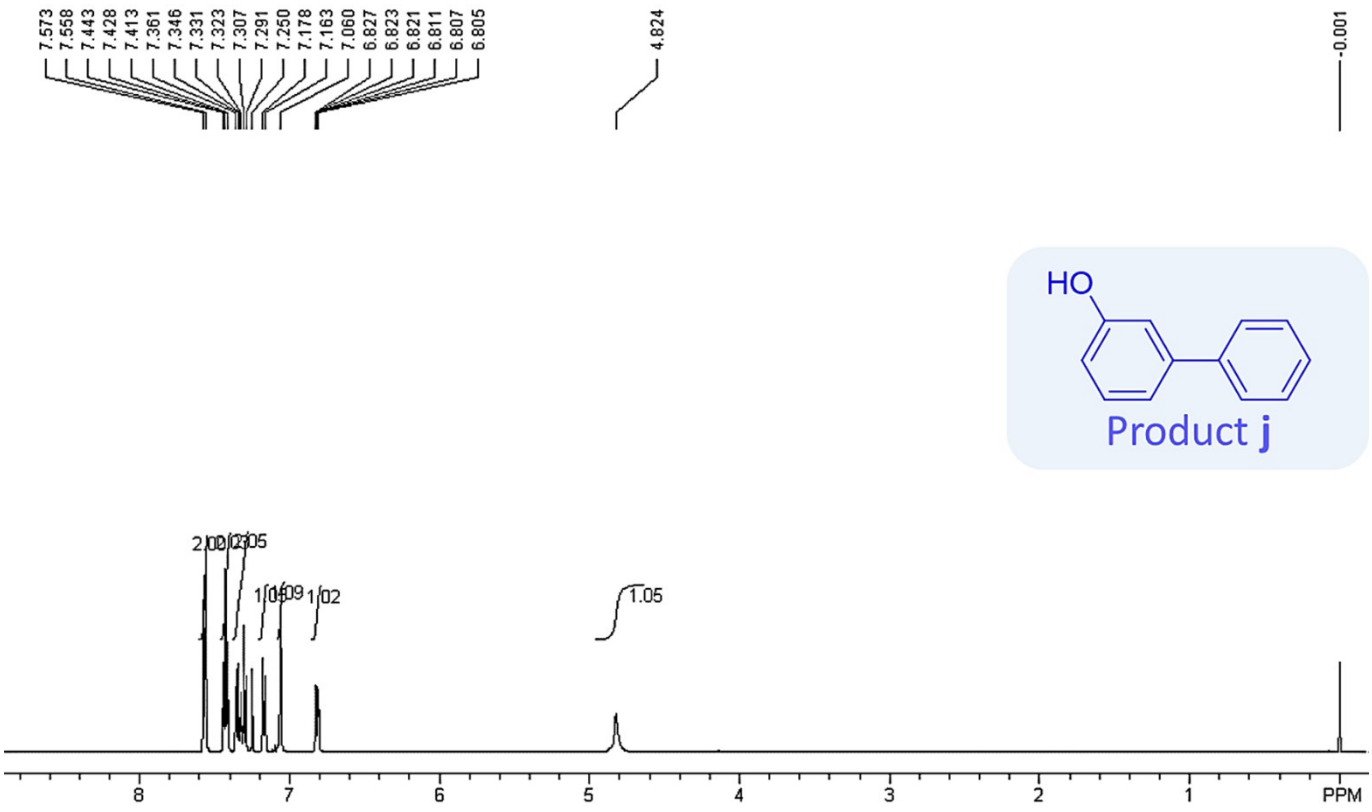

Figure S10. ^{1}H-NMR spectrum of biphenyl-3-ol (**j**).

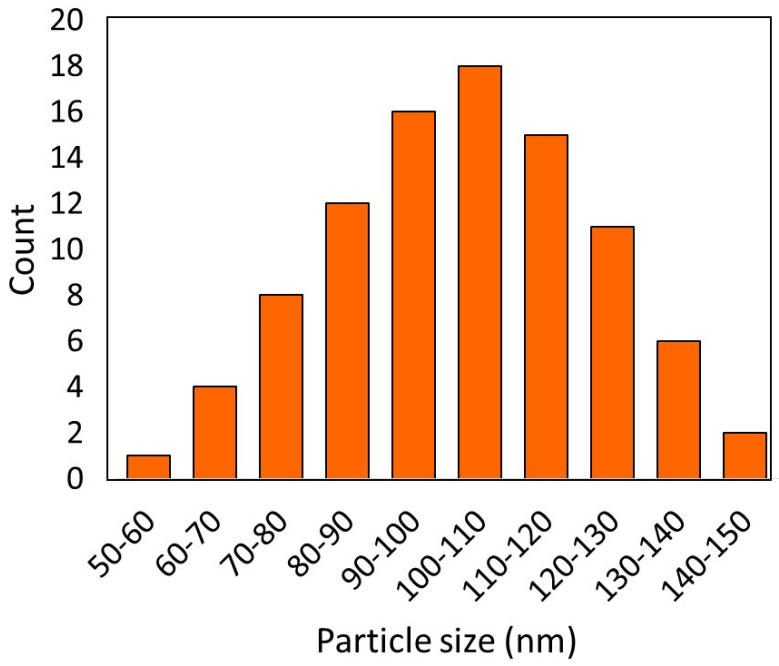

Figure S11. Size distribution diagram of the formed Pd nanoparticles.

Calculations of mol% of VPMP@CLS-Pd catalyst:

4-Iodonitrobenzene (as reactant): 1.0 mmol = 0.249 g, and VPMP@CLS-Pd (as catalyst): 0.01 g were used.

From EDX analysis (Figure 2b), 3.5 wt% of the total weight of catalyst is related to Pd nanoparticles.

3.5 × 0.01 g / 100 = 0.00035 g (pure weight of Pd nanoparticles in 0.01 g of catalyst)

=> (0.00035 / 0.249) × 100 = **0.14 wt%** (weight percentage of the applied catalyst)

0.00035 g (Pd) = 0.00328 mmol (Pd)

=> (0.00328 mmol of Pd/ 1 mmol of reactant) × 100 = **0.33 mol%**