

Supporting Information for

A novel “tunnel-like” Cyclopalladated Arylimine Catalyst Immobilized on Graphene oxide Nano-sheet

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Optimization of Suzuki–Miyaura reaction conditions.

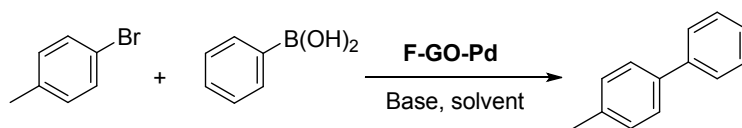


Table S1 Optimization of Suzuki–Miyaura reaction conditions

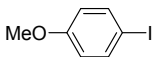
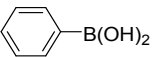
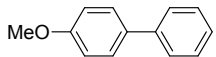
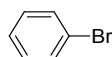
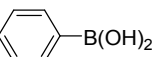
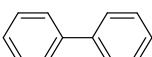
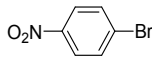
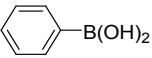
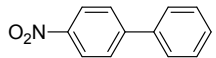
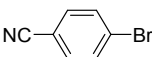
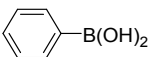
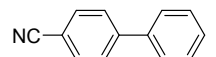
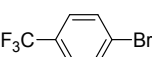
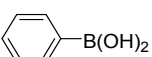
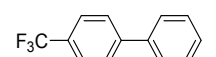
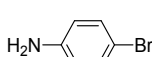
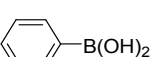
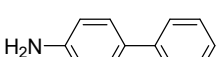
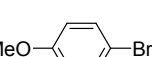
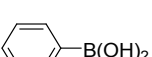
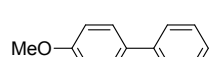
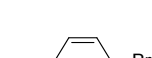
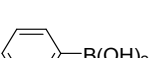
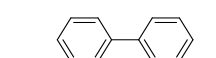
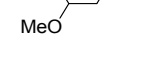


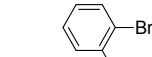
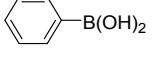
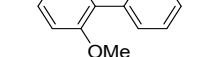



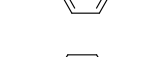

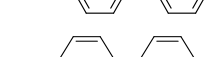
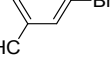
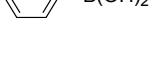

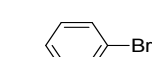
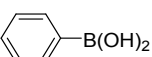
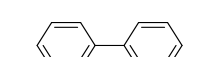
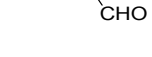

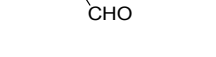
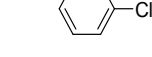
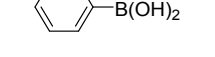
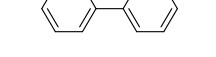
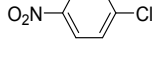
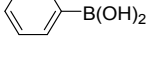
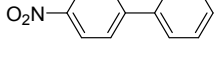
Entry	Base	Solvent	Time (min)	T(°C)	Isolated yield (%)	TOF (mol mol _{Pd} ⁻¹ h ⁻¹)
1	K ₂ CO ₃	H ₂ O:EtOH(1:1)	60	70	99	1429
2	Na ₂ CO ₃	H ₂ O:EtOH(1:1)	60	70	93	1329
3	K ₃ PO ₄	H ₂ O:EtOH(1:1)	60	70	90	1286
4	NaOH	H ₂ O:EtOH(1:1)	60	70	93	1329
5	NaOAc	H ₂ O:EtOH(1:1)	60	70	59	843
6	K ₂ CO ₃	H ₂ O	60	70	48	686
7	K ₂ CO ₃	EtOH	60	70	27	386
8	K ₂ CO ₃	DMF	60	70	11	157
9	K ₂ CO ₃	MeOH	60	70	73	1043
10	K ₂ CO ₃	H ₂ O:EtOH(1:1)	45	70	99	1905
11	K ₂ CO ₃	H ₂ O:EtOH(1:1)	30	70	99	2859
12	K ₂ CO ₃	H ₂ O:EtOH(1:1)	20	70	99	4287
13	K ₂ CO ₃	H ₂ O:EtOH(1:1)	20	70	97 ^b	21008
14	K ₂ CO ₃	H ₂ O:EtOH(1:1)	20	70	99 ^c	7147
15	K ₂ CO ₃	H ₂ O:EtOH(1:1)	20	60	91 ^b	19708
16	K ₂ CO ₃	H ₂ O:EtOH(1:1)	20	50	84 ^b	18192
17	K ₂ CO ₃	H ₂ O:EtOH(1:1)	20	25	74 ^b	16026
18	K ₂ CO ₃	H ₂ O:EtOH(1:1)	30	25	79 ^b	11406
19	K ₂ CO ₃	H ₂ O:EtOH(1:1)	60	25	86 ^b	6208
20	K ₂ CO ₃	H ₂ O:EtOH(1:1)	120	25	92 ^b	3321

^a Reaction condition: PhB(OH)₂ (0.55 mmol), 4-bromotoluene (0.5 mmol), Base (1 mmol), **F-GO-Pd** 5 mg containing 0.00035 mmol Pd, solvent (4 mL) at 70 °C. ^b **F-GO-Pd** 1 mg, ^c **F-GO-Pd** 3 mg.

Suzuki–Miyaura reaction of aryl halides with different arylboronic acids.

Table S2 Suzuki–Miyaura reaction of aryl halides with different arylboronic acids

Entry	Ar-X	Ar' -B(OH) ₂	Product	Yield (%)	TOF (mol mol _{Pd} ⁻¹ h ⁻¹)
1				>99	21658

2				>99	21658
3				>99	21658
4				95	20575
5				>99	21658
6				>99	21658
7				>99	21658
8				>99	21658
9				>99	21658
10				91	19708
11				99	21441
12				89	19275
13				83	17976
14				30	6497
15				96	20791
16				21	4548
17				95	20575
18				99	21441

^a Reaction condition: PhB(OH)₂ (0.55 mmol), 4-bromotoluene (0.5 mmol), Base (1 mmol), F-GO-Pd 1 mg containing 0.00035 mmol Pd, solvent (4 mL) at 70 °C.

Supplementary Figures

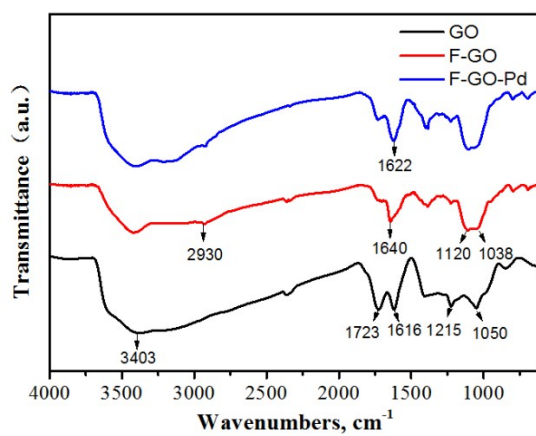


Fig. S1 FT-IR spectra of GO, F-GO, F-GO-Pd.

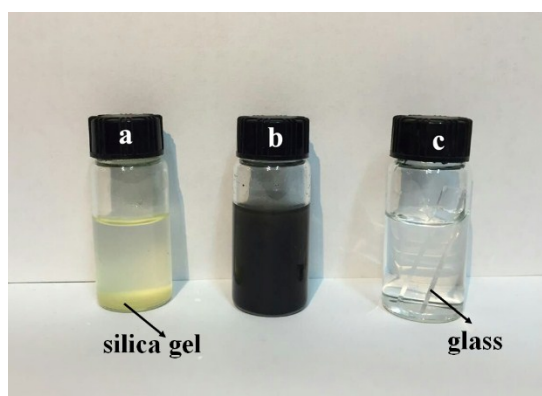


Fig. S2 Photographs of different support catalyst dispersed in 50% alcohol aqueous solution (a) F-Silica-Pd, (b) F-GO-Pd, (c) F-SiO₂-Pd.

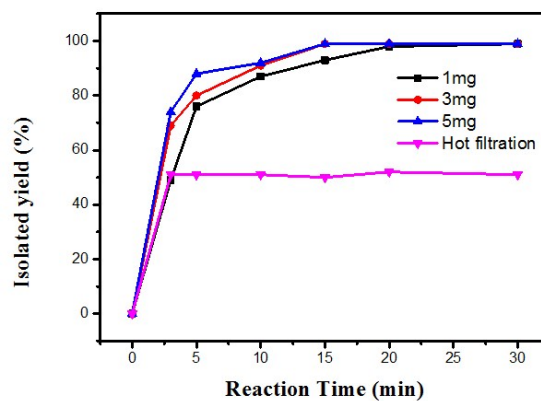


Fig. S3 Curve of yield versus reaction time for different catalyst loading and hot filtration experiment.

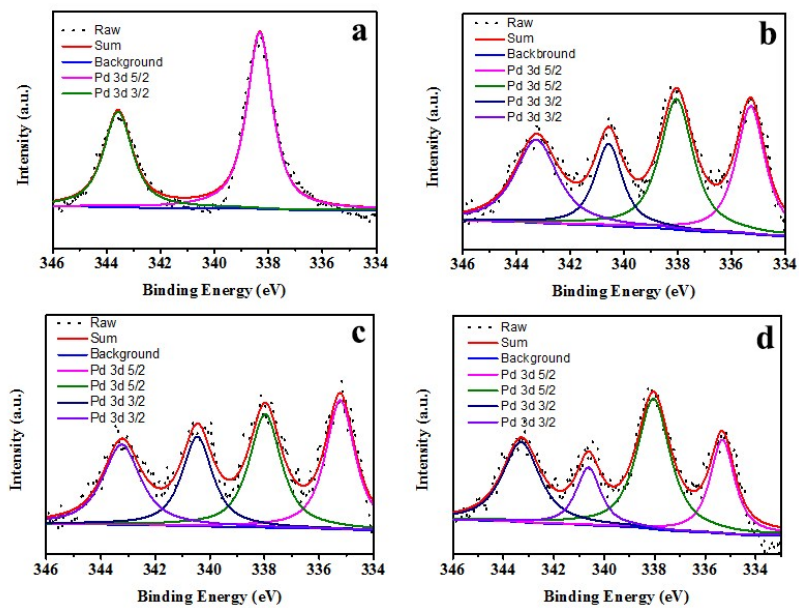


Fig. S4 Pd 3d XPS spectra of different reaction time (a) 0 min, (b) 3 min, (c) 10 min, (d) 20 min.

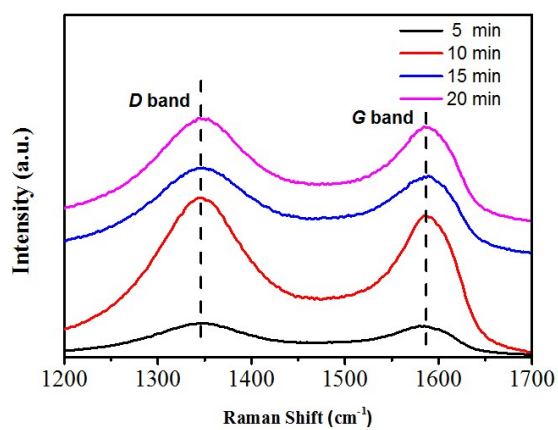


Fig. S5 Raman spectra of F-GO-Pd during the reaction process.