Supplementary Material (ESI) for Chemical Communications

Electronic Supplementary Information:

Demonstration of a magnetic and catalytic Co@Pt nanoparticle as a dual-function nanoplatform

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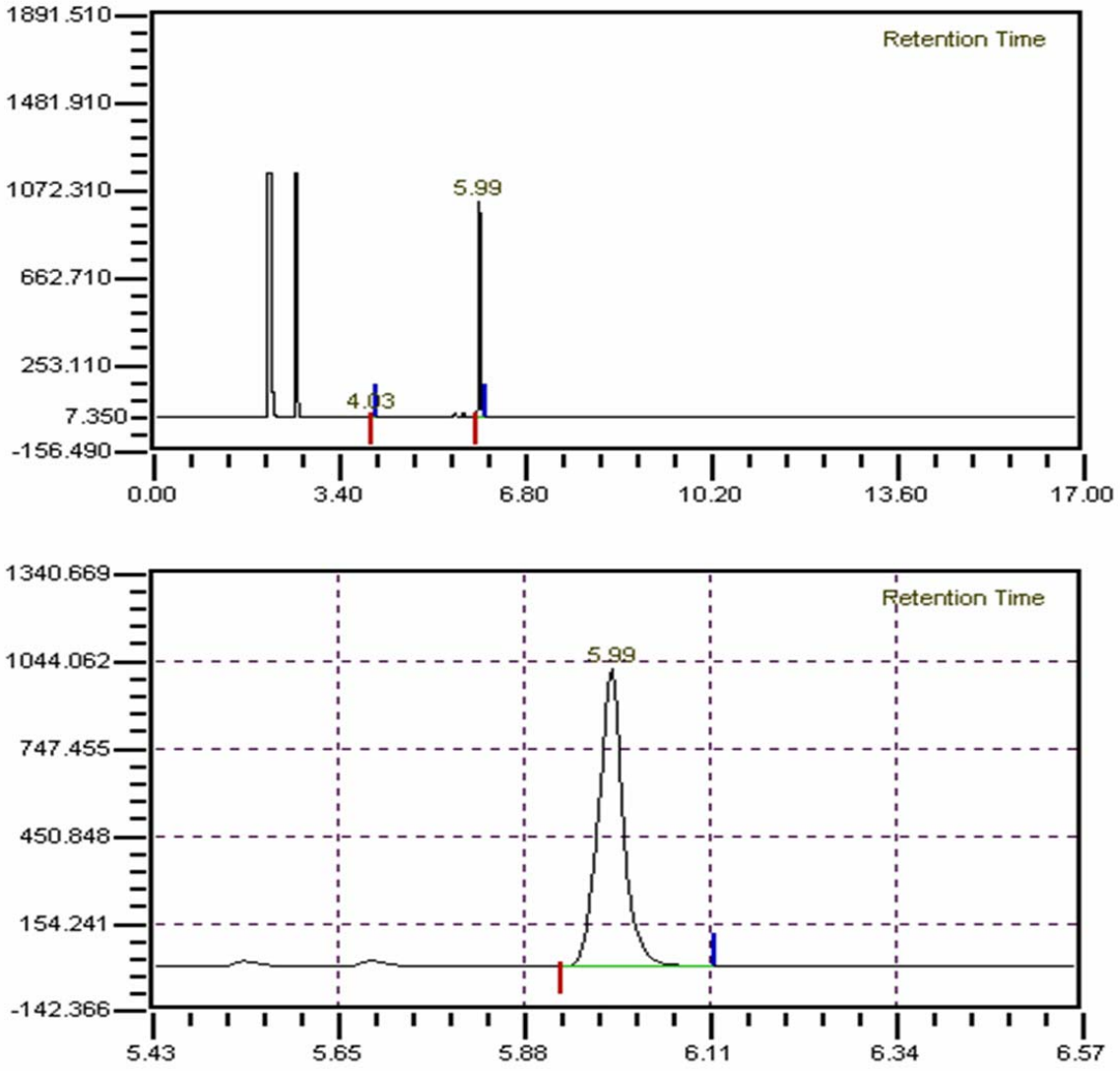
1. Experimental

Representative Catalytic Procedure**:** A screw-capped vial (1 mL) was charged with 0.25 mmol of organic substrate and 2 mol% of Co@Pt nanoparticle **1.** This reaction mixture was suspended in 0.1 ml of toluene. It was stirred under an H_2 atmosphere for a given period using a toy balloon. Following the reaction, after standing the resulting mixture for 10 min without stirring, Co@Pt nanoparticles were collected on the central portion of a magnetic stirring bar. The clear reaction solution was carefully separated using a syringe and directly analyzed by using various tools such as GC-MS and GC.

2. Representative GC chromatogram of entry1 in Table 2



PK No.	RT	Peak Width	Area	Height	Area %	Height %	Code
1	4.032	2.363	367085	7855	0.94114	0.77436	BB
2	5.991	1.868	38637065	1006528	99.05886	99.22564	BB

The peaks between 1.7~3.4 are corresponding to the solvent used for the dilution purpose during injection (CH_2Cl_2) and the reaction (toluene). The peak at 4.03 is impurity peak.

3. GC-MS fragmentation patterns and relative intensities in Table 2

Compound: m/z (intensity %):

n-decane: 170(M, 10.31), 98(11.3), 85(51.5), 71(72.3), 70(16.9), 57(100), 56(17.8), 55(16.2), 43(71.5), 42(12.0), 41(33.5), 29(15.5)

cyclododecane: 168(M, 34.0), 140(18.1), 125(22.0), 112(19.5), 111(55.9), 110(10.2), 98(31.6), 97(85.0), 96(25.0), 85(12.5), 84(49.2), 83(100), 82(50.9), 81(10.6), 71(16.8), 70(70.3),69(91.7), 68(32.8), 67(19.8), 57(36.0). 56(58.7), 55(85.0), 54(1.06), 43(33.8), 42(21.3), 41(61.8), 39(17.1), 29(15.84)

ethylbenzene: 106(M, 32.5), 91(100), 32(30.1), 28(99.4), 18(13.0)

n-octane: 114(M, 2), 112(66.8), 84(14.5), 83(35.4), 71(40.6), 70(38.9), 69(14.9), 57(16.5), 56(51.8), 55(100), 43(16.5), 42(24.9), 41(68.4), 39(20.1), 29(12.0), 27(14.0)

propylbenzene: 120(M, 27.3), 92(11.5), 91(100)

1,2-diphenylethane: 182(M, 31.5), 91(100), 65(10.6)

benzyl alcohol: 108(M, 100), 107(66.6), 91(13.8), 79(76.9), 51(12.9)

hydrocinnamyl alcohol: 138(1.8), 136(M, 30.6), 118(58.2), 117(100), 105(12.8), 103(10.4), 92(44.7), 91(78.4), 77(13.3), 73(10.5)

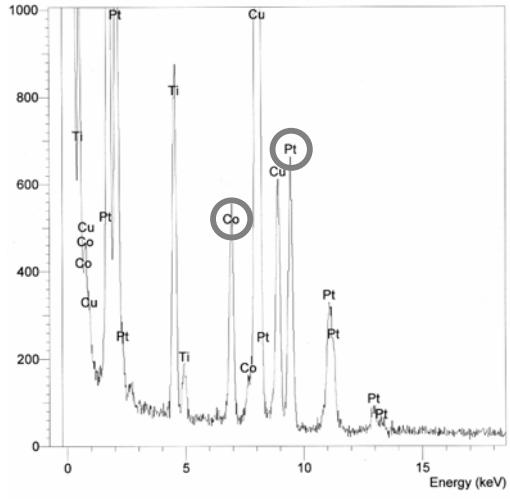
cyclohexanone: 98(M, 68.2), 83(14.0), 70(31.4), 69(45.6), 56(12.8), 55(100), 43(10.3), 42(54.8), 41(23.2), 39(15.4), 28(14.6), 27(11.0)

aniline: 93(M, 100), 92(11.7), 66(25.2), 65(12.6)

2-bromoaniline: 173(100), 171(M, 93.5), 92(25.5), 65(27)

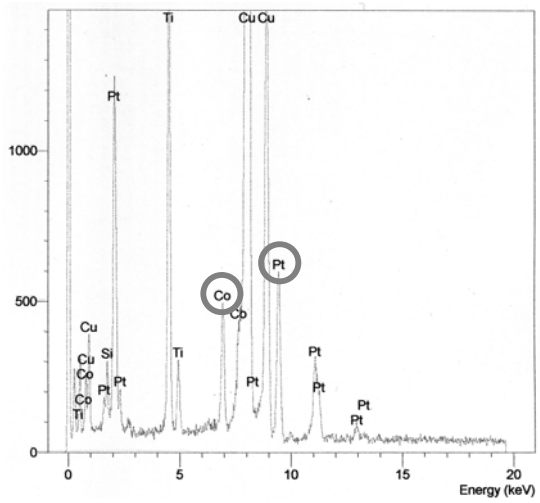
4. Energy dispersive atomic absorption of X-ray (EDAX) analysis of Co@Pt nanopaticles before and after the reactions

Before the reactions



Co : Pt = 45 : 55

After the reactions



Co : Pt = 46 : 54