Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supporting Information for

Flower-like Au/Ni-Al Hydrotalcite with Hierarchical Pore Structure as a Multifunctional Catalyst for Catalytic Oxidation of Alcohol

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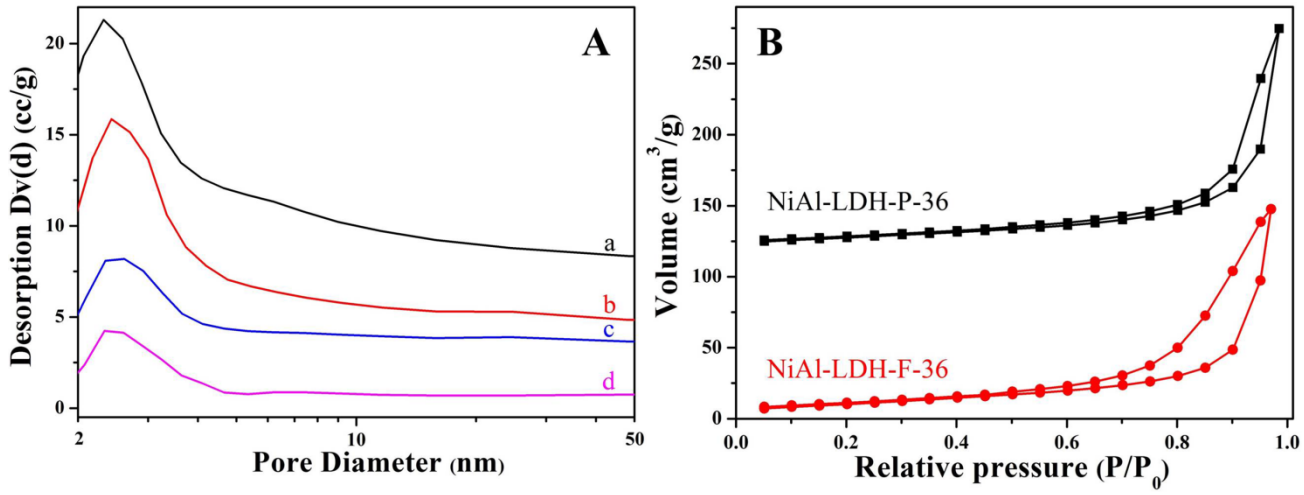

Fig. S1 Pore size distributions (A) and N2-sorption isotherms (B) of NiAl-LDH-P-36 (a), NiAl-LDH-F-36 (b), NiAl-LDH-F-24 (c) and NiAl-LDH-F-12 (d).

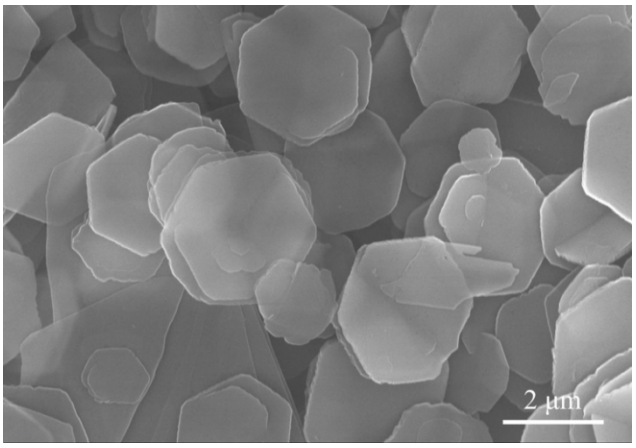

Fig S2. SEM image of MgAl-LDH-P-36.

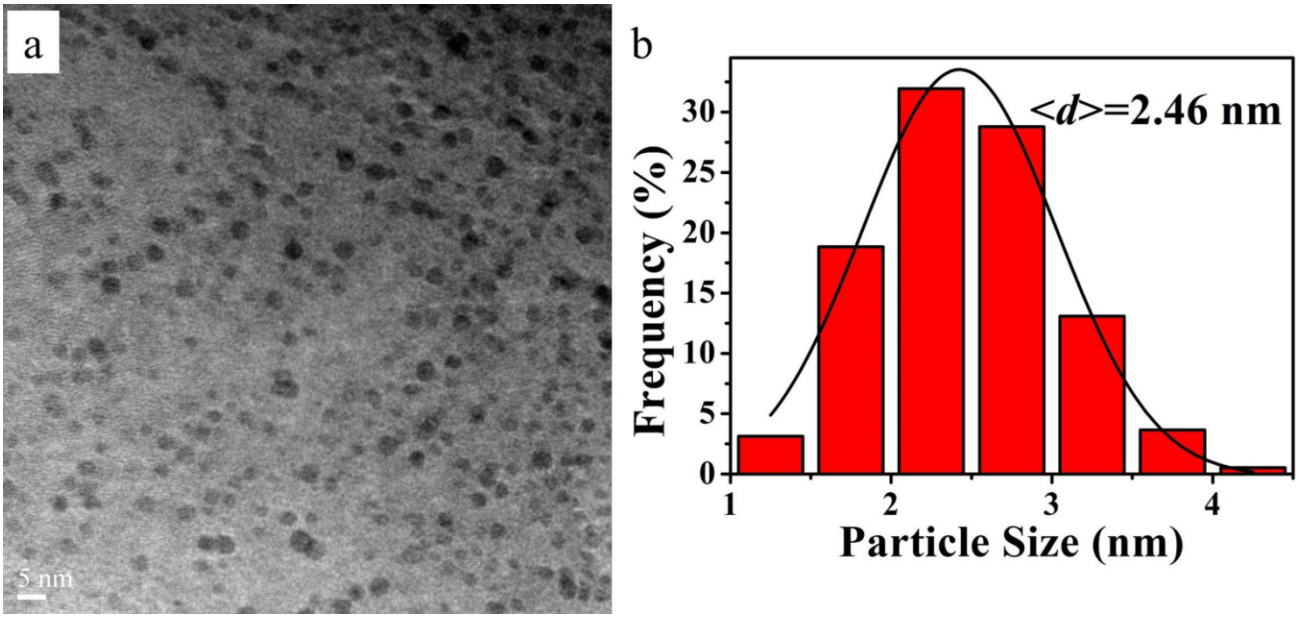

Fig S3. HRTEM image (a) and AuNPs size distribution of Au/MgAl-LDH-P-36 (b).

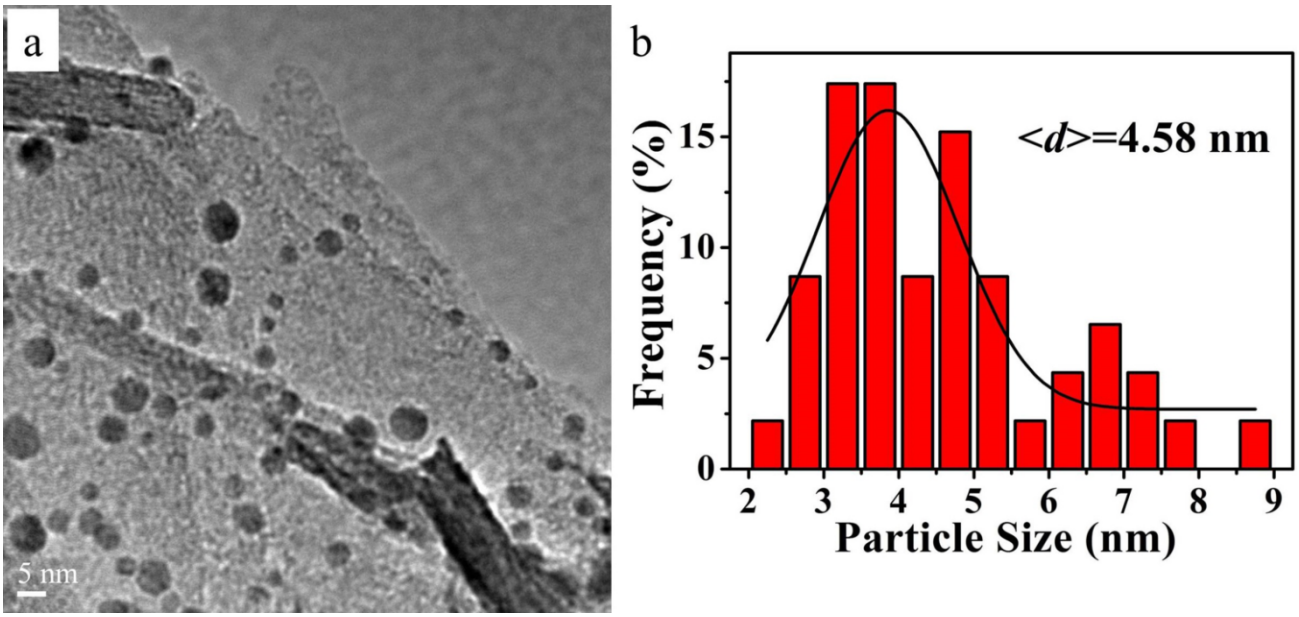

Fig S4. HRTEM image (a) and AuNPs size distribution of used Au/NiAl-LDH-P-36 (b).

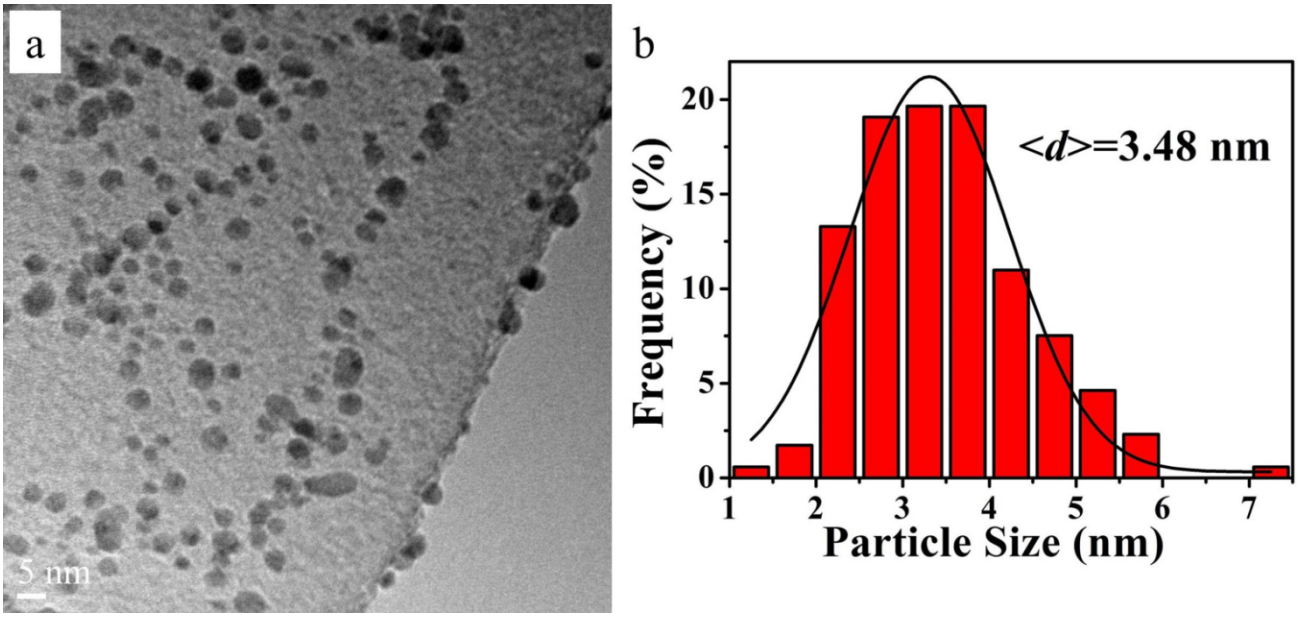

Fig S5. HRTEM image (a) and AuNPs size distribution of used Au/NiAl-LDH-F-36 (b).

Table S1 The XPS results of several catalysts.

Catalyst	Ni $2p_{3/2}$				Au $4f_{7/2}$			
	Compound Type	B.E. (eV)	FWHM	Fraction (%)	Compound Type	B.E. (eV)	FWHM	Fraction (%)
NiAl-LDH-F-36 (fresh)	Ni^{2+}	855.88	3.1	100	-	-	-	-
	Ni^{3+}	-	-	0	-	-	-	-
NiAl-LDH-F-36 (pretreated)	Ni^{2+}	855.88	3.1	35	-	-	-	-
	Ni^{3+}	856.77	2.65	65	-	-	-	-
NiAl-LDH-F-36 (used)	Ni^{2+}	855.88	3.1	38	-	-	-	-
	Ni^{3+}	856.77	2.65	62	-	-	-	-

Au/NiAl-LDH-F-36 (fresh)	Ni^{2+}	856.08	3.1	100	Au^{0}	82.90	1.26	30
	Ni^{3+}	-	-	0	Au^{+}	84.61	2.59	70
					Au^{3+}	-	-	0
Au/NiAl-LDH-F-36 (pretreated)	Ni^{2+}	856.08	3.1	59	Au^{0}	82.90	1.26	36
	Ni^{3+}	856.84	2.65	41	Au^{+}	84.61	2.59	55
					Au^{3+}	85.81	1.19	9
Au/NiAl-LDH-F-36 (used)	Ni^{2+}	856.08	3.1	72	Au^{0}	82.90	1.26	33
	Ni^{3+}	856.84	2.65	28	Au^{+}	84.61	2.59	64
					Au^{3+}	85.81	1.19	3

Table S2 Vibrational modes assignment in the 1750–1350 cm^{-1} region at 100 °C.

Au/NiAl-LDH-36 flow	NiAl-LDH-36 flow	Assignment
1720		ν(C=O)
1702		ν(C=O)
	1606	ν(C=C) + δ(C-H)
1598	1596	ν(C=C) + δ(C-H)
1584	1584	ν(C=C) + δ(C-H)
1496	1496	δ(C-H) + ν(C=C)
1454	1454	δ(C-H) + ν(C=C)
1390		δ(O-H)
	1380	δ(O-H)
	1370	δ(O-H)