Supplementary Data:

Synergistic catalysis of polyoxometalates-intercalated layered double hydroxide: Oximation of aromatic aldehydes with large enhancement of selectivity

Shen Zhao,[a] Junhua Xu,[a] Min Wei,[a] Yu-Fei Song,[a,b]*

a State Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical Technology, 100029 Beijing, P. R. China. Email: songyufei@hotmail.com; Tel/Fax: +86-10- 64431832
b Key Laboratory of Cluster Science, Beijing Institute of Technology, Ministry of Education of China, 100081 Beijing, P. R. China.

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Fig S2. TG curves of three LDHs-POM samples.

Reference

Table S1. Oximation of thiophene-2-carboxaldehyde using ammonia and H_2O_2 solutions catalyzed by Zn_3Al-Zn_5WO which were recycled for ten times.

Catalysts	Conversion/mol% (conversion to main and side products)	Selectivity/mol%		
		Main product	Side products	
		Oxime/mol%	Amide[a]/mol%	Nitrile[b]/mol%
Catalyst as prepared	90	85	6	9
Reused two times	90	85	6	9
Reused four times	88	83	7	10
Reused six times	87	83	7	10
Reused eight times	87	83	7	10
Reused ten times	87	87	7	10

a: Beckmann rearrangement product. b: Dehydration product.

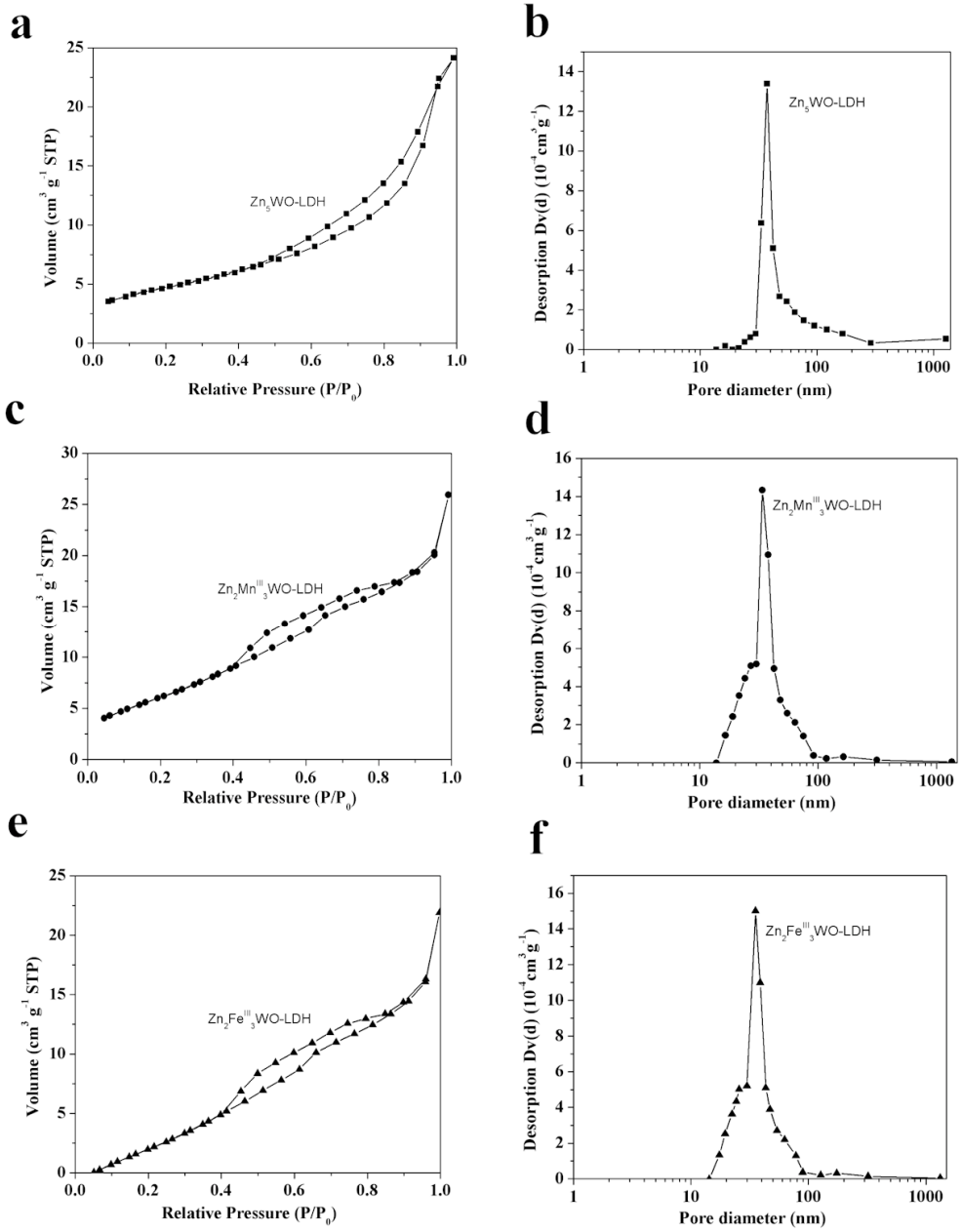

Fig S1. N_2 adsorption-desorption isotherms and the pore diameter distributions for three LDHs-POM samples.

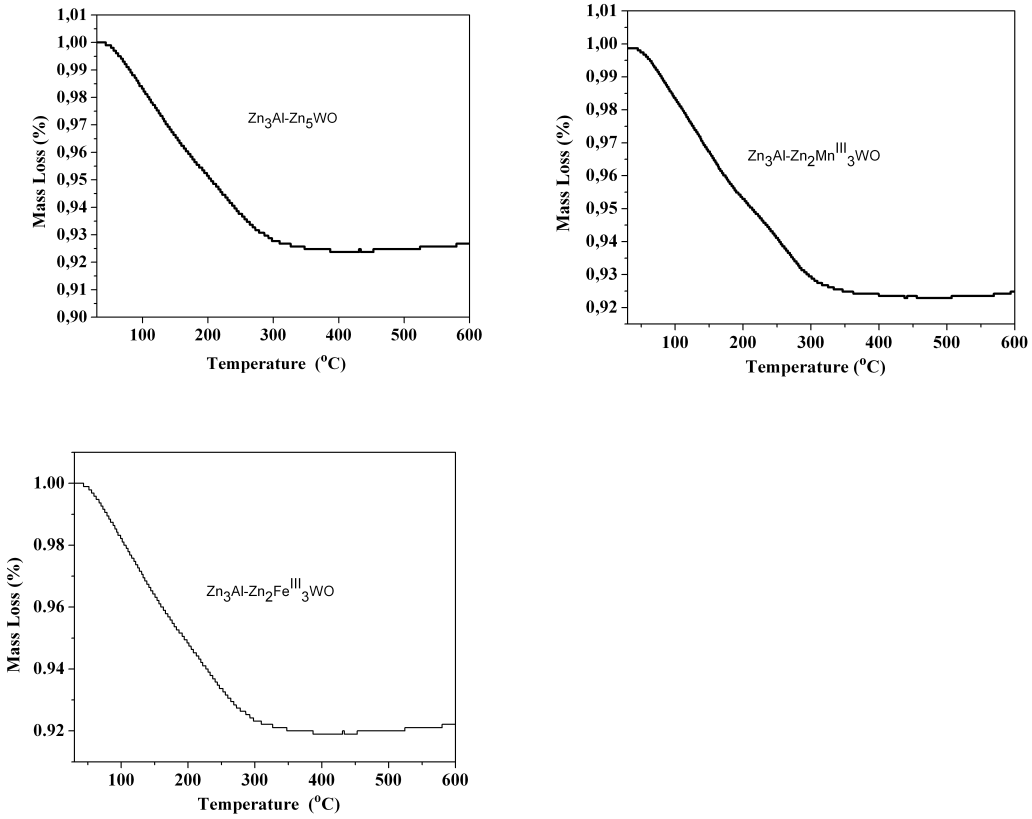

Fig S2. TG curves of three LDHs-POM samples.

TG measurements on the LDHs-POM samples showed a weight loss less than 7% in the range of 25-600°C, corresponding to the loss of surface-adsorbed water and the interlayer water molecules. In contrast, TG measurements on three POMs of Na-Zn_5WO, K-$Zn_2Mn^{III}_3WO$ and K-$Zn_2Fe^{III}_3WO$ showed the weight loss of 13.8%, 8.4% and 13.3% in the range of 25-600°C, respectively.[S1]

Reference

[S1] C. M. Tourné, G. F. Tourné and F. Zonnevijlle, *J. Chem. Soc., Dalton Trans.*, 1991, 143.