

## Supporting Information

### **Design, Fabrication and Anti-aging Behavior of Multifunctional Inorganic-Organic Hybrid Stabilizer Derived from Co-intercalated Layered Double Hydroxides for Polypropylene**

Qian Zhang,<sup>a</sup> Yixuan Guo,<sup>a</sup> Adam A. Marek,<sup>b</sup> Vincent Verney,<sup>b</sup> Fabrice Leroux,<sup>\*b</sup> Pinggui Tang,<sup>a</sup> Dianqing Li<sup>a</sup> and Yongjun Feng<sup>\*a</sup>

a. State Key Laboratory of Chemical Resource Engineering, Beijing Engineering Center for Hierarchical Catalysts, Beijing University of Chemical Technology, No. 15 Beisanhuan East Road, Beijing 100029, China.

b. Universite Clermont Auvergne, Institut de Chimie de Clermont-Ferrand ICCF, UMR-CNRS 6296, F 63171 Aubière, France.

\*Corresponding author:

F. Leroux, E-mail: [fabrice.leroux@uca.fr](mailto:fabrice.leroux@uca.fr); Y.J. Feng, E-mail: [yjfeng@mail.buct.edu.cn](mailto:yjfeng@mail.buct.edu.cn)

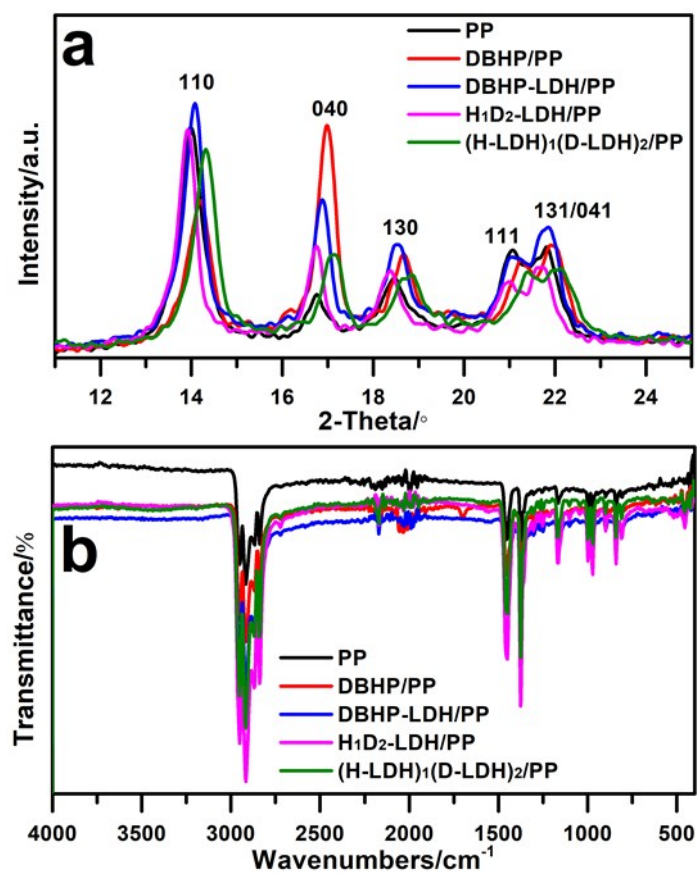


Fig. S1 (a) XRD patterns in  $11-25^\circ/2\theta$  and (b) FT-IR spectra of LDH/PP composites prepared by extrusion mixing method.

**Table S1 Chemical compositions and cell parameters of  $Zn_2Al$ -LDH.**

Code	Experimental chemical composition	Interlayer distance $c' = d_{003}$ (Å)	$d_{110}$ (Å)
HALS-LDH	$Zn_2Al(OH)_6(HALS^-)_{0.9} \cdot 1.1H_2O$	11.7	1.53
DBHP-LDH	$Zn_2Al(OH)_6(DBHP^-)_{1.1} \cdot 3H_2O$	26.3	1.52
$H_1D_1$ -LDH	$Zn_2Al(OH)_6(HALS^-)_{0.5}(DBHP^-)_{0.5} \cdot 5H_2O$	26.9	1.53
$H_2D_1$ -LDH	$Zn_2Al(OH)_6(HALS^-)_{0.66}(DBHP^-)_{0.34} \cdot 1.35H_2O$	26.7	1.52
$H_1D_2$ -LDH	$Zn_2Al(OH)_6(HALS^-)_{0.37}(DBHP^-)_{0.66} \cdot 4H_2O$	26.7	1.52

**Table S2 Thermal results of Zn<sub>2</sub>Al-LDH.**

Sample	T <sub>10</sub> (°C)	T <sub>50</sub> (°C)	DTA peak (°C)	Residual mass (wt. %)
HALS	206	287	300	0
DBHP	237	282	306	0
HALS-LDH	208	—	308, 420	59
DBHP-LDH	172	371	334, 378	34
<b>H<sub>1</sub>D<sub>1</sub>-LDH</b>	<b>187</b>	<b>411</b>	<b>344, 435</b>	<b>34</b>
H <sub>2</sub> D <sub>1</sub> -LDH	187	400	340, 405	38
H <sub>1</sub> D <sub>2</sub> -LDH	185	377	335, 377	36

**Table S3 Thermal results of LDH/PP composites.**

Sample	T <sub>onset</sub> (°C)	T <sub>10</sub> (°C)	T <sub>50</sub> (°C)	Residual mass (wt %)
PP	278	291	331	15
HALS/PP	295	275	347	0.0
DBHP/PP	272	287	349	17
HALS-LDH/PP	331	276	362	1.6
DBHP-LDH/PP	312	267	348	0.0
<b>H<sub>1</sub>D<sub>1</sub>-LDH/PP</b>	<b>376</b>	<b>317</b>	<b>399</b>	<b>0.0</b>
H <sub>2</sub> D <sub>1</sub> -LDH/PP	369	312	386	0.0
H <sub>1</sub> D <sub>2</sub> -LDH/PP	368	323	394	0.6
(H-LDH) <sub>1</sub> (D-LDH) <sub>1</sub> /PP	340	311	373	3.5

---

(H-LDH) <sub>2</sub> (D-LDH) <sub>1</sub> /PP	336	299	375	6.8
(H-LDH) <sub>1</sub> (D-LDH) <sub>2</sub> /PP	338	323	377	16

---