Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supplementary Material

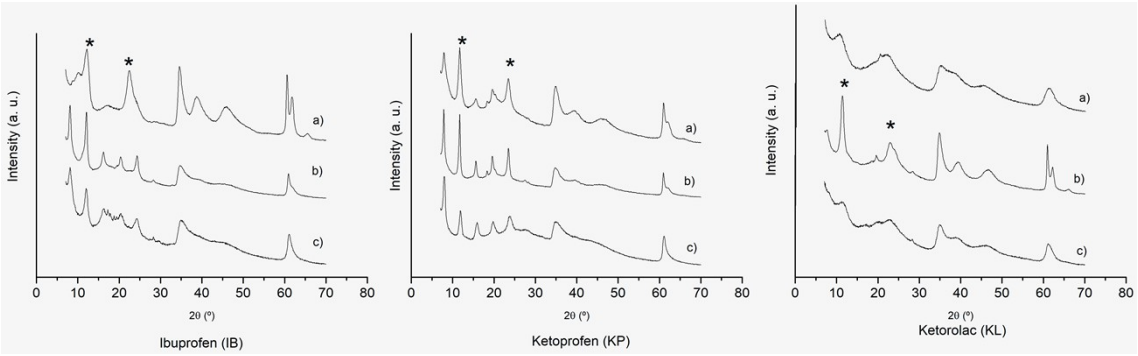

Figure S1. X ray diffraction pattern of LDH simples intercalated wit ibuprofen, ketoprofen and ketorolac obtained by different synthesis methods: a) no hydrothermal treatment (NHT), b) hydrothermal synthesis after washing (HTW), c) hydrothermal treatment after synthesis (HTS).

Table S1. Mg/Al ratio, NSAID contents (expressed as percentage of the anionic exchange capacity (%AEC) and as w/w percentage and zeta potential (ζ) of the LDH samples obtained by different synthesis methods. The samples used in the main article are highlighted in grey.

Anion	Synthesis Method	Mg/Al (EDS)	NSAID/Al ratio	% NSAID (w/w)	ζ(mV)
Ibuprofen (IB)	NHT	3.0	0.50	42	5.8
	HTW	2.4	1.10	47	19.7
	HTS	2.7	1.10	50	12.9
Ketoprofen (KP)	NHT	2.1	0.44	45	27.7
	HTW	2.1	0.73	43	12.0
	HTS	2.4	0.97	48	30.7
Ketorolac (KL)	NHT	2.2	0.18	29	32.3
	HTW	2.1	0.26	38	36.3
	HTS	2.1	0.72	44	22.5

The effect of hydrothermal treatment (HT) in the intercalation of the NSAIDs was explored. Three different routes were essayed: a) synthesis of LDH-NSAID without HT (NHT), b) HT at 90 °C for 4 hours after the synthesis and before separation of the synthesis medium (HTS), c) HT at the end of the procedure, after the solid was separated and washed 2 times with water (HTW). For this last route, the solids are redispersed in 200 mL water and, after the HT, the solid is again separated by centrifugation. In all cases, the samples were lyophilized to obtain the dried powder. The PXRD patterns indicate that peaks of a carbonate or chloride intercalated phases

(marked with asterisks) were obtained for samples intercalated with IB and KP obtained by the NHT route KP. Note that these peaks were overlapped with peaks corresponding to NSAID-intercalated LDH, increasing the relative intensity of these peaks instead of producing new ones. The intensity of these peaks diminished for HTW but HTS samples presented a negligible contribution of carbonate-intercalated phases.

In good accord, as can be observed in table 1, the largest intercalation was obtained for HTS samples, which was assigned to the aging in the presence of the corresponding drug. The zeta potential (ζ) values were positive but small in all cases, which led to a high aggregation of the particles and large hydrodynamic diameter values (d>5µm). Due to the absence of secondary phases and large intercalation, HTS was selected as synthesis method.

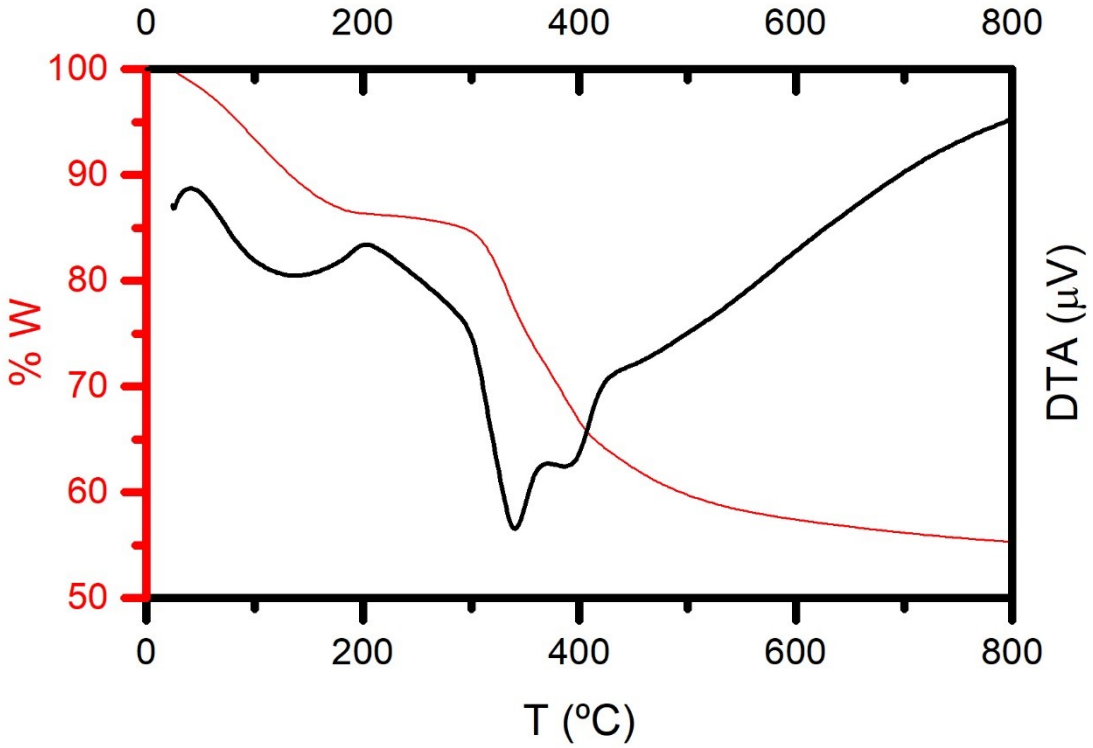

Figure S2. TG/DTA diagram of LDH-Cl sample

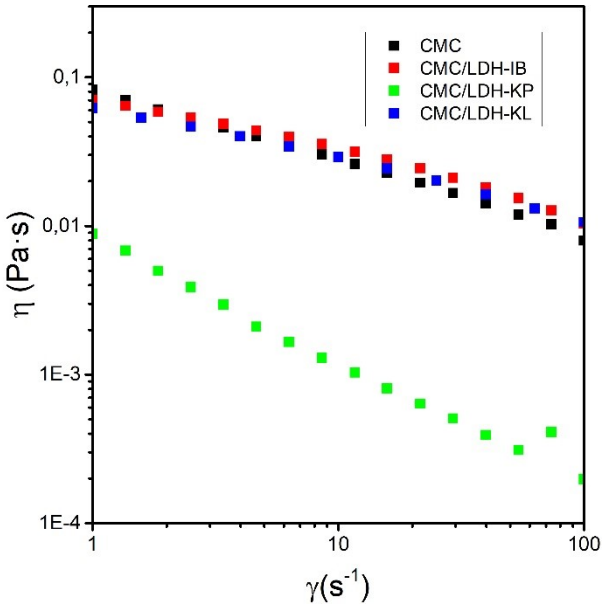

Figure S3. Dynamic viscosity (η) vs shear rate (γ) curves for CMC and CMC/LDH-NSAID dispersions. $\eta = \frac{\tau}{\gamma}$**, were** τ **is the shear stress.**