A novel core-shell structured magnetic organic-inorganic nanohybrid involving drug-intercalated layered double hydroxides coated on a magnesium ferrite core for magnetically controlled drug release

Hui Zhang*, Dengke Pan, Kang Zou, Jing He and Xue Duan

State Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical Technology, P.O. Box 98, Beijing 100029, China

Correspondence should be addressed to Hui Zhang. Email: huizhang67@gst21.com

Table S1. XRD Structural Parameters of the As-synthesized Samples and Some Related Data

Table S2. Rate Constants and r^2 Coefficients Obtained from Fitting Analyses.

Table S1. XRD Structural Parameters of the As-synthesized Samples and Some Related Data

Samples	d_{003}/nm	d_{110}/nm	D_{110}/nm[1,2]	D_{003}/nm[1]	AR[3]	Core%[4]	Drug /%[5]	Mg/Al[6]
DIC-LDH	2.37	0.1520	19.73	18.60	1.06	0	52.25(57.24)	2.135
DIC-M	2.35	0.1523	14.42	17.33	0.83	6.34	43.88(42.88)	2.175
DIC-Mix	2.37	0.1520	19.40	18.45	1.05	4.76	50.81(52.45)	2.134

[1] Calculated from Scherrer equation.

[2] Particle size on (110) direction was obtained by fitting to the Gaussian deconvolution of the (110) reflection peak.

[3] AR：aspect ratio, AR =D_{110}/ D_{003}.

[4] Estimated from Fe content based on the ICP data taking into account of the experimental determined formula of magnesium ferrite of $MgFe_{1.03}O_{2.545}$.

[5] Determined upon CHN analysis, the values in blanket is obtained from UV measurements.

[6] Based on ICP analysis.

Table S2. Rate Constants and r^2 Coefficients Obtained from Fitting Analyses.

Fitting results	DIC-M (MF off)	DIC-M (MF on)
First-order equation $\ln(c_t/c_0) = -kt$		
k	0.1466	0.1038
r^2	0.8471	0.9324
[1] Bhaskar equation $\ln(c_0/c_t) = Bt^{0.65}$		
B	0.5443	0.2678
r^2	0.9769	0.9842
Modified Freundlich model $(c_0-c_t)/c_0 = kt^b$		
k	0.6147	0.4908
b	0.2395	0.2116
r^2	0.9922	0.9950
[2] Ritger-Peppas model $F = kt^n$		
k	0.6406	0.4927
n	0.2611	0.2154
r^2	0.9972	0.9942

[1] $1-c_t/c_0 \leq 0.85$

[2] $F \leq 0.75$