(Supporting Information)

Controlled drug release characteristics and enhanced antibacterial effect of graphene oxide/drug intercalated layered double hydroxides hybrid films

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| Sample | Composition | | | | | | | | | | | | | | | |
|----------------|-------------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|------|-------|-------|-------|
| | Mg | | Al | | С | | Н | | 0 | | N | | S | | Total | |
| | wt% | atom% | wt% | atom% | wt% | atom% | wt% | atom% | wt% | atom% | wt% | atom% | wt% | atom% | Total | Total |
| NO3-LDHs | 17.42 | 7.52 | 8.81 | 3.43 | 0.00 | 0.00 | 4.13 | 42.93 | 65.07 | 42.70 | 4.57 | 3.42 | 0.00 | 0.00 | 100 | 100 |
| BP-LDHs | 9.69 | 3.62 | 5.16 | 1.74 | 32.64 | 24.68 | 4.91 | 44.10 | 37.09 | 21.05 | 5.06 | 3.28 | 5.45 | 1.53 | 100 | 100 |
| GO | 0.00 | 0.00 | 0.00 | 0.00 | 58.36 | 47.52 | 2.98 | 28.85 | 38.66 | 23.63 | 0.00 | 0.00 | 0.00 | 0.00 | 100 | 100 |

Table S1 The observed (wt%) and the calculated (atom%) elemental contents of NO3-LDHs, BP-LDHs, and GO.



Fig. S1 Molecular structures of the benzylpenicillin anion



Fig. S2 Solid state ¹³C NMR spectra of (a) pure BP and (b) BP-LDHs



Fig. S3 Fitted BP anion release data of powdery BP-LDHs.



Fig. S4 Fitted BP anion release data of GLF-2.

0.7 Bhaskar Eqn. r = 0.9842First-order Eqn. r = 0.99670.8 0.6 0.5 0.6 (J-10.3 1)00 1-0.2 0.1 $-\log(1-F)$ 0.4 0.2 0.1 0.0 0.0 2000 4000 6000 8000 10000 12000 14000 500 100 200 300 400 0 0 $t^{0.65}/s$ t/s 0.7 0.0 Higuchi Eqn. r = 0.9883-0.2 -0.4 Peppas Eqn. r = 0.98080.6 0.5 -0.6 0.4 -0.8 $\log(F)$ -1.0 <u>د</u> 0.3 -1.2 0.2 -1.4 0.1 -1.6 -1.8 0.0 -2.0 L 2.6 20 30 40 80 90 100 2.8 3.0 3.2 3.4 3.6 3.8 4.0 50 60 70 t^{0.5}/s $\log(t)(s)$ Fig. S5 Fitted BP anion release data of GLF-3. 0.7 1.2 Bhaskar Eqn. First-order Eqn. 0.6 1.0 r = 0.9856*r* = 0.9957 0.5 0.8 (J 0.4 1) 0.3 0.2 $-\log(1-F)$ 0.6 0.4 0.2 0.1 0.0 0.0 200 400 600 800 1000 1200 1400 1600 1800 10000 20000 30000 40000 50000 -200 0 0



0.0

-0.2

t(s)

 $t^{0.65}(s)$

0.7

Fig. S6 Fitted BP anion release data of GLF-4.