

Supplementary material

Simultaneous adsorption of phosphate and diclofenac by Li/Al layered double hydroxides loaded on modified wheat straw

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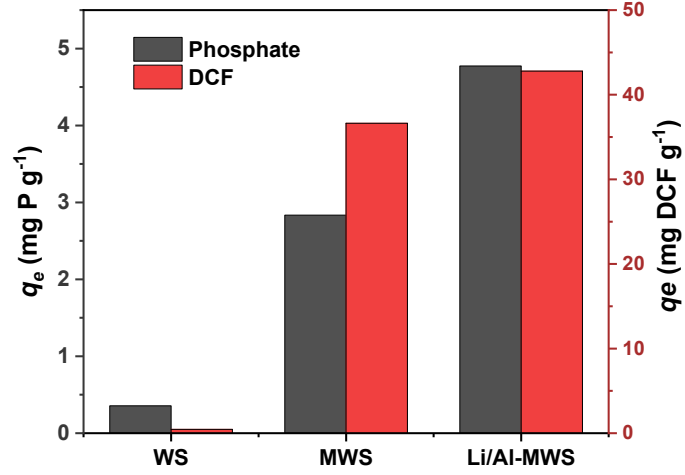


Fig. S1 Adsorption capacities of phosphate and DCF on WS, MWS and Li/Al-MWS.

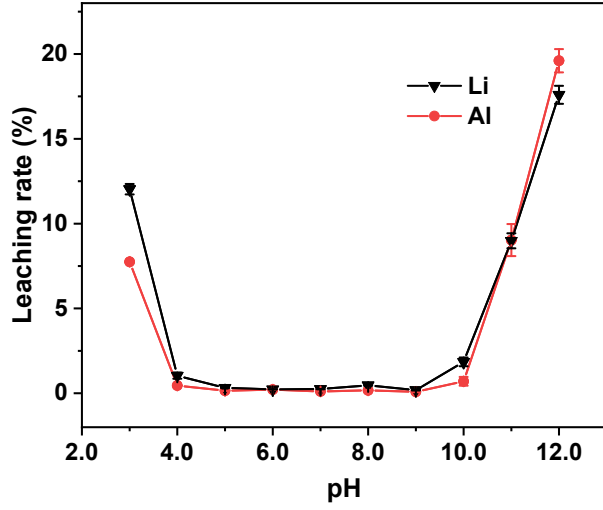


Fig. S2 Stability of Li/Al-MWS under different pH.

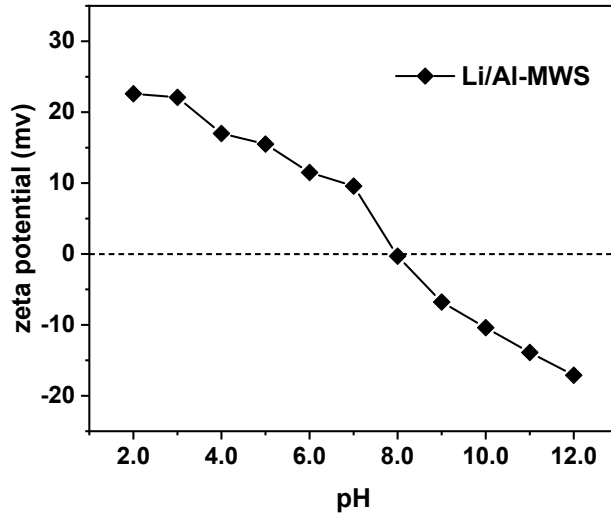


Fig.S3 Zeta potential of Li/Al-MWS.

Table S1 Kinetic parameters of phosphate adsorption onto Li/Al-MWS.

| Substrate | Pseudo-first-order | | | Pseudo-second-order | | | Intraparticle diffusion | | | | | |
|-----------|--------------------|-------|-------|---------------------|-------------------|-------|-------------------------|--------|-------|----------|-------|-------|
| | q_e (mg/g) | k_1 | R^2 | q_e (mg/g) | $k_2 \times 10^3$ | R^2 | 1 | | | 2 | | |
| | | | | | | | k_{p1} | C_1 | R^2 | k_{p2} | C_2 | R^2 |
| P | 4.479 | 0.020 | 0.947 | 5.132 | 4.89 | 0.983 | 0.353 | 0.245 | 0.993 | 0.175 | 1.669 | 0.990 |
| P + DCF | 3.488 | 0.028 | 0.986 | 3.887 | 9.49 | 0.998 | 0.386 | -0.151 | 0.996 | 0.102 | 2.010 | 0.996 |

Table S2 Kinetic parameters of DCF adsorption onto Li/Al-MWS.

| Substrate | Pseudo-first-order | | | Pseudo-second-order | | | Intraparticle diffusion | | | | | |
|-----------|--------------------|-------|-------|---------------------|-------------------|-------|-------------------------|--------|-------|----------|--------|-------|
| | q_e (mg/g) | k_1 | R^2 | q_e (mg/g) | $k_2 \times 10^3$ | R^2 | 1 | | | 2 | | |
| | | | | | | | k_{p1} | C_1 | R^2 | k_{p2} | C_2 | R^2 |
| DCF | 42.199 | 0.011 | 0.992 | 51.422 | 0.218 | 0.998 | 2.874 | -2.578 | 0.997 | 1.366 | 16.022 | 0.991 |
| DCF + P | 28.166 | 0.014 | 0.982 | 33.115 | 0.481 | 0.997 | 2.365 | -2.202 | 0.988 | 1.161 | 7.977 | 0.983 |

Table S3 The isothermal fitting parameters of phosphate adsorption onto Li/Al-MWS.

| T/K | Freundlich | | | Langmuir | | |
|-----|-------------------------------|------|-------|------------------|------------|-------|
| | K (mg/g)/(g/L) ⁿ | n | R^2 | q_{max} (mg/g) | b (L/mg) | R^2 |
| 298 | 7.10 | 1.65 | 0.984 | 65.58 | 0.091 | 0.984 |
| 308 | 8.09 | 1.62 | 0.991 | 70.47 | 0.086 | 0.984 |
| 318 | 7.50 | 1.63 | 0.990 | 74.22 | 0.089 | 0.981 |

Table S4 The isothermal fitting parameters of DCF adsorption onto Li/Al-MWS.

| T/K | Freundlich | | | Langmuir | | |
|-----|-------------------------------|------|-------|------------------|------------|-------|
| | K (mg/g)/(g/L) ⁿ | n | R^2 | q_{max} (mg/g) | b (L/mg) | R^2 |
| 298 | 13.44 | 1.77 | 0.906 | 105.14 | 0.056 | 0.958 |
| 308 | 27.42 | 2.65 | 0.966 | 113.09 | 0.173 | 0.989 |
| 318 | 37.36 | 3.20 | 0.910 | 114.35 | 0.291 | 0.983 |