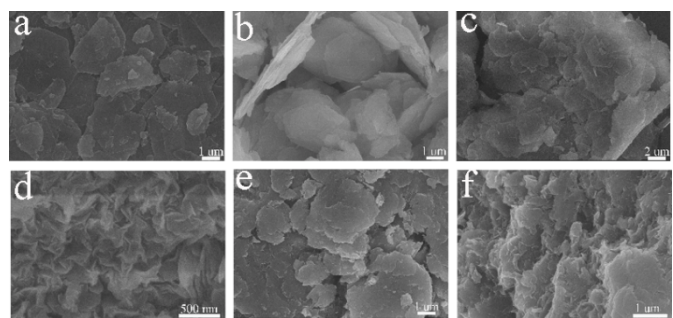
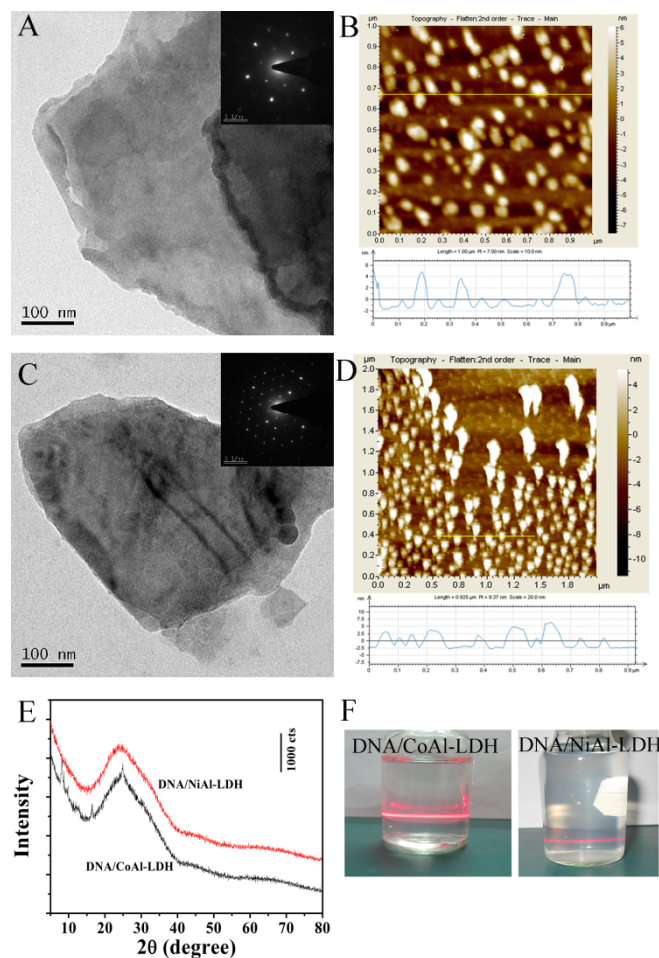


**Figure S1.** XRD patterns of (A) CoAl-LDH (a:  $\text{CO}_3^{2-}$ , b:  $\text{Cl}^-$ , c:  $\text{NO}_3^-$ ) and (B) NiAl-LDH (d:  $\text{CO}_3^{2-}$ , e:  $\text{Cl}^-$ , f:  $\text{NO}_3^-$ ) samples in different periods.



**Figure S2.** SEM images of CoAl-LDH (a:  $\text{CO}_3^{2-}$ , b:  $\text{Cl}^-$ , c:  $\text{NO}_3^-$ ); and NiAl-LDH (d:  $\text{CO}_3^{2-}$ , e:  $\text{Cl}^-$ , f:  $\text{NO}_3^-$ ) samples in different stages.



**Figure S3.** TEM image (A, inset: SAED pattern) and AFM image with parallel height profile (B) of DNA/CoAl-LDH nanohybrids. TEM image (C, inset: SAED pattern) and AFM image with parallel height profile (D) of DNA/NiAl-LDH nanohybrids. XRD patterns (E) and Tyndall effect (F) of different DNA/LDH nanohybrids.

**Table S1.** Kinetic parameters of DNA/CuAl-LDH nanohybrids.

| Substrate                     | $K_m$ (mM) | $V_{max}$ ( $M \cdot s^{-1}$ ) |
|-------------------------------|------------|--------------------------------|
| TMB                           | 1.775      | $4.09 \times 10^{-8}$          |
| H <sub>2</sub> O <sub>2</sub> | 10.24      | $2.30 \times 10^{-8}$          |