

Programmable hybrid nanocontainers for stimuli-triggered drug release

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The rational design of stimuli-responsive hybrid nanocontainers opens new opportunities for precision drug delivery. We engineer layered double hydroxide (LDH)–organic hybrids that act as programmable nanocontainers, where therapeutics intercalated in lamellar hosts are released through enzymatic or thermoresponsive gates. This strategy enables tunable release, improved colloidal stability, and on-demand responsiveness, highlighting LDH-based hybrids as versatile nanocontainers for next-generation smart drug-delivery systems.