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## Charge-convertible layered double hydroxide nanoparticles for enhanced tumor internalization and therapeutic efficiency

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Layered Double Hydroxide (LDH) nanoparticles are extensively studied as multifunctional nano carriers due to their unique 2D structure with versatility in both host layer and interlayer anion. In previous work, positive-charged LDH nanoparticles were coated with bovine serum albumin via electrostatic interaction to avoid clearance by mononuclear phagocyte system and prolong blood circulation. However, their practical applicability in tumor therapeutics is limited by their negative charge on the nanoparticles surface, which hinders their cellular uptake via endocytosis of negative cell membrane. Here in, charge-switchable polymer-coated LDH nano platform was designed to protect LDH nanoparticles from serum protein adsorption in blood due to the negative surface at normal physiological condition, and promote LDH nanoparticles with regenerated positive charge to adhere targeted tumor cells in response to the acidic tumor extracellular microenvironment. The in vitro experimental results demonstrated that this promising charge-convertible nano carrier decreased the internalization of macrophages and facilitated the cellular uptake of tumor cells, thus potentially reducing adverse effects on the healthy tissues and promoting therapeutics delivery to target cells. The in vivo experiments further confirmed high tumor-inhibition efficacy and low side effects of the charge-convertible LDH nanoparticles, proving its capability as a smart drug nano carrier with enhanced therapeutic effects.

### Biography

Jianping Liu has completed her PhD from University of Queensland and Master's degree in School of Chemical Engineering and Technology, Tianjin University.

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