Feng Zhao

Prof. P. Chen

Multiple functional nano MOF particles as anticancer drug delivery system

Nano metal organic framework materials (NMOFs) are a new class of porous materials these years. They have attracted much attention due to their wide application in the fields of drug delivery. Based on the structural advantages of MOFs, the active sites of Lewis acid or base ligands can control the interaction and release of drugs and biological systems. At the same time, weaker coordination bonds ensure the biodegradability. A cell penetrating peptide (CPP), NP1, for siRNA delivery systems has been developed in our group.CPP-based siRNA vectors have many advantages, such as biodegradability, high transmembrane efficiency, and endosome escape ability. We plan to modify an NP1-derived peptide onto PCN-224 MOF particles to create a versatile drug and siRNA delivery platform for photodynamic therapy and chemotherapy. Doxorubicin (antitumor drug) can be loaded in porphyrin-MOFs which has a large photosensitizer loading. CPP- functionalized nano metal organic framework materials can be used for drug delivery and photodynamic therapy to deliver DOX and photosensitizer-containing MOF particles to tumor cells.