

Interfacial synthesis of 2D bis(terpyridine)metal(II) complex polymers with a pyridine-cored ligand

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Coordination nanosheets (CONASHs) are emerging two-dimensional materials prepared in bottom-up ways via coordination bonds. Rich varieties of the combinations between metal ions and organic ligands endow various functionalities to CONASHs.¹ Bis(terpyridine)metal(II) complexes are one of the most fundamental coordination compounds. Their chemical and physical properties are highly dependent on the metal centers. Thus, we have developed materials chemistry of bis(terpyridine)metal(II)-based CONASHs using various metal ions. When redox-active metal ions are employed as metal centers in bis(terpyridine)metal(II)-based CONASHs, they exhibit rich electrochemical properties such as electrochromism and electrical conductivity based on redox-conduction mechanism.²⁻⁵ In addition, when d¹⁰ metal ions such as Zn²⁺ were used, luminescent bis(terpyridine)metal(II)-based CONASHs.⁶

Chemical modification of terpyridine ligands is also effective to create useful CONASHs. However, the functionalization of bis(terpyridine)metal(II)-based CONASHs by introducing functional groups or molecular-recognizing moieties is still in its infancy. Here, we newly designed and synthesized a terpyridine ligand modified with pyridine group, which can act as molecular recognition moieties for acids and metal ions (Figure). We will report the interfacial synthesis, characterization, and functions of bis(terpyridine)metal(II)-based CONASH using the pyridine-cored ligand.

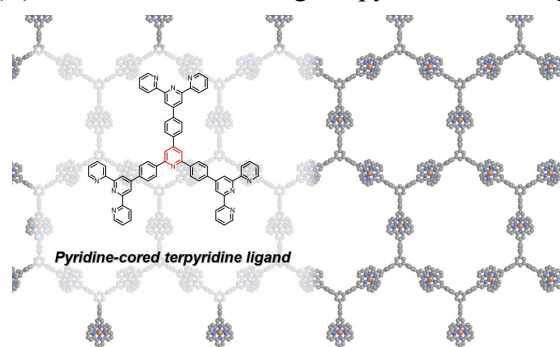


Figure. 2D bis(terpyridine)metal(II) polymer using the pyridine-cored terpyridine ligand

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