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Induced Self-Assembly of Alkynylplatinum(II) Complexes by Variations of Solvent Compositions and Addition of Polyelectrolytes

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Water-soluble cationic alkynylplatinum(II) 2,6-bis(benzimidazol-2'-yl)pyridine (bzimpy) complexes have been synthesized and demonstrated to undergo self-assembly with anionic polyelectrolytes in aqueous buffer solution. The self-assembly processes have been shown to give rise to the formation of metal–metal-to-ligand charge transfer (MMLCT) absorptions and triplet MMLCT (³MMLCT) emissions. The supramolecular assemblies exhibit different photophysical properties and excited state chemistry, which has been rationalized by the difference in Förster resonance energy transfer (FRET) efficiency, extent of polymer–metal complex aggregate formation, photo-induced charge transfer (PCT), and Dexter triplet energy back transfer (TEBT) quenching.

In addition, a new class of amphiphilic platinum(II) terpyridine-based polymers has been prepared and demonstrated to give different morphologies in various solvent compositions. The morphological changes could induce drastic UV-vis and emission spectral changes due to the formation of Pt...Pt and π - π interactions. The morphological changes have been studied by electron microscopy, UV-vis absorption, and emission spectroscopy.

1 K. Chan, C. Y. S. Chung, V. W. W. Yam, *Chem. Eur. J.*, **2015**, *21*, 16434.