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TIN(IV) PORPHYRIN AS A VERSATILE MOLECULAR COMPONENT FOR DEVELOPING PHOTO/ELECTRO-ACTIVE MATERIALS

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Porphyrins and metalloporphyrins are attractive molecular components for the design of artificial photosynthetic systems and applications in molecular photoelectronic materials and devices because of their unique structures and rich photoelectronic properties. Accordingly, a great variety of porphyrins and metalloporphyrins as a versatile molecular component has been engaged in the development of advanced photoelectronic materials through covalent or noncovalent linkages. In particular, the use of noncovalent linkage such as metal-ligand coordination by the central metal ions in metalloporphyrins is a promising approach to create self-assembled photoelectronic nano-materials and -devices. Tin(IV) porphyrins provide many advantages for this modular approach owing to the particular properties conferred by the highly charged main group metal center. For example, due to the strong preference of the tin(IV) center for coordination to carboxylates and phenolates, tin(IV) porphyrins are readily formed stable six-coordinate structures with two *trans*axial ligands. Therefore, tin(IV) porphyrins can play a crucial role as a molecular photo/electro-active bridge connecting other two photo/electronic systems in the construction of intriguing photoelectronic materials and devices. In this context, we here present novel photoelectronic molecular systems including the tin(IV) porphyrin moiety such as ferrocene-porphyrin-ferrocene and dithienylethene-porphyrin -dithienylethene triads for the development of advanced photoelectronic materials.