

A Photophysical Study of Tandem-Type Schiff Base-Pt Complex that Show Alkaline Metal Ion-Responsive Chromism

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Pt complexes have been drawing much attention due to their prominent chromism, i.e., a visible response to some external stimuli. Additionally, the square-planar geometries of these complexes enable the assembly into integrated aggregates driven by π - π stacking, metal-metal interactions, H-bonding and so on.¹ For example, we previously reported tandem-type Pt-salen complexes bearing a semiflexible linker, which can cause drastic conformational changes under mechanical stress, leading to a new design of stimuli-response materials.² Herein we report a novel kind of Schiff base-Pt complexes, to further explore the possibility of conformational change of Pt complexes to afford chromism.

Pyridine-terminated oligo(oxyethylene) chains were used as linkers to synthesize tandem-type dinuclear Schiff base-Pt complexes (**Fig. 1**). They exhibited to form folded structure where two Pt-complex units were in proximity owing to the interactions between the linker and Na⁺ ion (**Scheme 1**). As the conformation changes, Pt complex units approach each other with the assistance of π - π interactions, probably responsible for a color change from yellow to green. And the color change was reversible depending on the solvent composition. To examine the structure-chromism relationship, we conducted the single-crystal X-ray structural analysis and several measurements, including the solid-state microscopy-associated absorption and emission spectroscopic measurement.

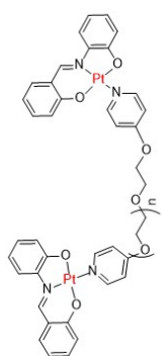
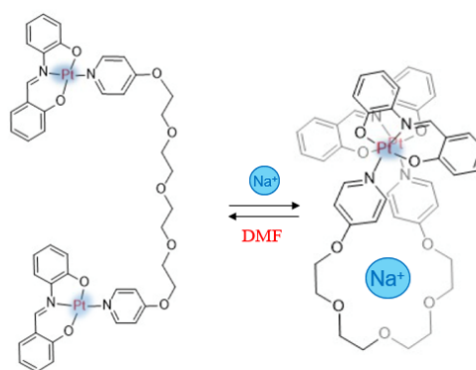


Fig. 1 Molecular structure of (Pt)₂EG_n



Scheme 1 Conformation change of (Pt)₂EG₃

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