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Abstract

Synthesis and Chiral Molecular Recognition of Phenylene-Bridged Bispyrrole Derivatives Having *N*-Substituted Imino Groups †

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Abstract: Spectroscopic sensing of chiral substances with chemosensors has attracted much attentions in the field of supramolecular chemistry. We previously reported that *p*-phenylene-bridged bispyrrole bearing *N*-alkylimino groups becomes an acid-responsive single trichromatic BOG (blue, orange, and green) luminescent dye capable of emitting pure WL in solution.[1] The observed variable emission originates from its trichromatic luminescent behavior upon protonation of the imino groups. As an extension of the study, we newly designed the *m*-phenylene-bridged bispyrrole bearing *N*-substituted imino groups as an acyclic chemosensor for carboxylic acids. We expected that the imino (Schiff base) groups specifically bind the carboxylic acid via acid-base hydrogen bonding interactions. This guest-binding might bring about the specific conformational changes of the host molecule to give the characteristic spectral changes in UV-Vis absorption, fluorescence, and CD spectroscopies.

In this poster presentation, we report synthesis and chemoseising behaviors of the three-types of *m*-phenylene-bridged bispyrrole bearing *N*-pyridyl, benzyl, or alkyl substituted imino groups. These bispyrrole derivatives showed spectral changes in the absorption and CD spectroscopy upon mixing with chiral dibenzoyl tartaric acid and mandelic acid. Especially, the pyridyl-substituted bispyrrole showed characteristic and relatively stronger Cotton effect in CD spectroscopy, which may originate from the multi-points and multi-step host-guest interactions.

Keywords: bispyrrole; chiroptical sensing; tartaric acid; mandelic acid

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Reference

1. Imamura, K.; Ueno, Y.; Akimoto, S.; Eda, K.; Du, Y.; Eerdun, C.; Wang, M.; Nishinaka, K.; Tsuda, A. An Acid-Responsive Single Trichromatic Luminescent Dye That Provides Pure White-Light Emission. *ChemPhotoChem* **2017**, *1*, 427–431.