

# Syntheses and Photophysical Properties of Dipyridylmethene Boron Complexes

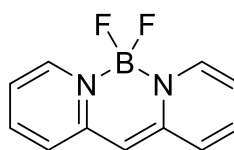
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$\pi$ -Conjugated complexes of group 13 elements have attracted attention because of their unique photophysical properties and variable stimuli-responsiveness. In addition, introducing these complexes into the mainchain of  $\pi$ -conjugated polymers can induce electronic interactions within or between polymer chains. Then, we focused

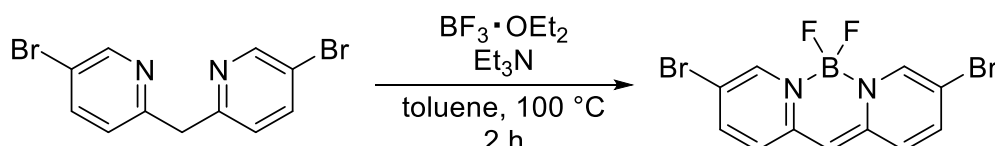
on a dipyridylmethene boron complex, possessing a planar structure and phosphorescent properties (Scheme 1). A pioneering work suggested that their phosphorescent properties are enhanced and depressed depending on the fusing position of the  $\pi$ -system.<sup>1</sup> Therefore, it was envisioned that the introduction of this complex into  $\pi$ -conjugated polymers could lead to changes in both phosphorescent properties and stimuli-responsiveness. Herein, we synthesized a new family of dipyridylmethene boron complexes with various ligand structures (Scheme 2). In the presentation, we will discuss their photophysical properties in detail.

**Scheme 1.** Chemical structure of dipyridylmethene boron complex



$\pi$  共役系 1 3 族元素錯体は優れた発光性および種々の刺激応答性を示す有望な骨格である。また、それらを  $\pi$  共役系高分子鎖中に導入することで、主鎖内あるいは主鎖間での色素間の電子的相互作用を誘起できる。そこで、我々は高い平面性や燐光特性を有するジピリジルメテンホウ素錯体に着目した (Scheme 1)。先行研究ではこの錯体特有の分子軌道に立脚した化学修飾によって燐光特性を制御できることが示唆されている<sup>[1]</sup>。この錯体の高分子化によって、燐光特性の変調および刺激応答性の発現が期待される。本研究では、高分子化を目指して新規の構造を有するジピリジルメテンホウ素錯体を合成した (Scheme 2)。発表ではそれらの光学特性についても詳述する。

**Scheme 2.** Synthetic scheme of the dipyridylmethene boron complex



[1] Thompson, M. E. *et al. J. Org. Chem.* **2017**, 82, 7215–7222.