

**Porphyrin-Ru(bpy)₃ Conjugates and Hetero Porphyrin Dimers
— Promising Precursors Towards Asymmetric Photocatalysis —**

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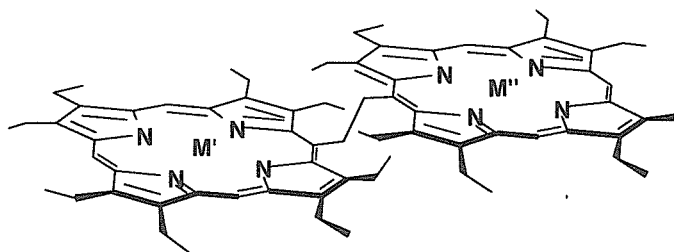
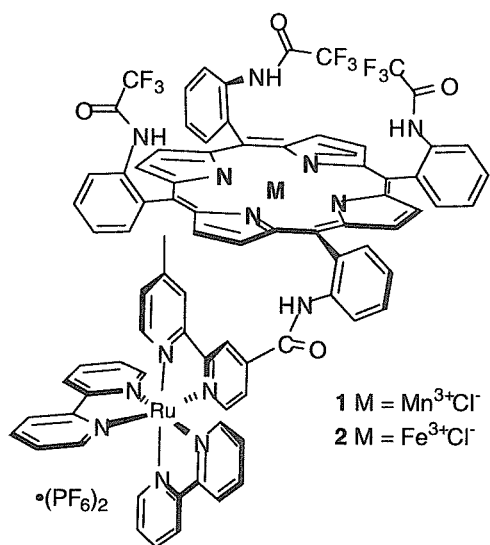
ポルフィリンートリス (ビピリジン) ルテニウム錯体連結化合物と
ポルフィリンのヘテロダイマー — 不斉光触媒をめざして —

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[Keywords] Photocatalysis, Porphyrinoid, Heterometallic System, Fluorescence, Electrochemistry

In Cytochrome P450, the key step in binding of dioxygen requires the reduction of Fe³⁺ to Fe²⁺ at the prosthetic porphyrinoid center. This can be achieved either electrochemically or by using external chemical electron donors. On the other hand, the attachment of a photosensitizing moiety to the catalytic porphyrinoid center should allow photoinduced electron transfer (ET) from the photosensitizer to the catalytic porphyrinoid and causing the reduction of M³⁺ to M²⁺ at the catalytic porphyrinoid.

The syntheses of 1-6 and their electron transfer abilities as studied by steady-state fluorescence spectroscopy, and their electrochemical properties evaluated by spectroelectrochemical methods will be shown.



- $3 \text{ M}' = 2\text{H}, \text{M}'' = \text{Mn}^{3+}\text{Cl}^-$
 $4 \text{ M}' = \text{Zn}, \text{M}'' = \text{Mn}^{3+}\text{Cl}^-$
 $5 \text{ M}' = 2\text{H}, \text{M}'' = \text{Fe}^{3+}\text{Cl}^-$
 $6 \text{ M}' = \text{Zn}, \text{M}'' = \text{Fe}^{3+}\text{Cl}^-$

References: J. M. Lintuluoto, V. V. Borovkov and Y. Inoue *Tetrahedron Lett.* **2000**, *41*, 4781-4786, V. V. Borovkov, J. M. Lintuluoto and Y. Inoue *SYNLETT.* **1998**, 768-770, V. V. Borovkov, J. M. Lintuluoto and Y. Inoue *SYNLETT.* **1999**, 61-62, V. V. Borovkov, J. M. Lintuluoto and Y. Inoue *Helv. Chim. Acta* **1999**, *82*, 919-934.