

ピリジルウレア部位をもつ三脚型トリスビピリジン鉄(II)錯体の 配位結合による自己集積化

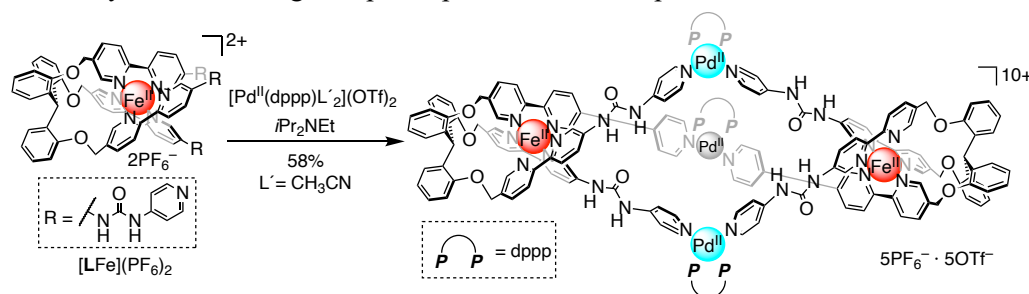
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 Coordination-driven self-assembly of a tripodal tris(bipyridine) iron(II) complex bearing
 pyridyl urea moieties (¹Graduate School of Pure and Applied Sciences, Univ. of Tsukuba,
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Cage-shaped supramolecular complexes with hydrogen-bond donor moieties are known to work as a functional supramolecular complex, such as an anion receptor¹⁾ and acid catalyst²⁾. In this study, we constructed a chiral cage-shaped supramolecular complex with hydrogen-bond-donor sites. We first synthesized a triple helical iron(II) complex $[\text{LFe}^{\text{II}}](\text{PF}_6)_2$ bearing pyridyl urea moieties. The reaction between $[\text{LFe}^{\text{II}}](\text{PF}_6)_2$ and $[\text{Pd}^{\text{II}}(\text{dppp})(\text{CH}_3\text{CN})_2](\text{OTf})_2$ led to the formation of the cage-shaped supramolecular complex with six urea moieties, which was supported by NMR and ESI-MS measurements. The target complex was successfully isolated in 58%. The NMR measurements and MM calculations suggested that the complex had a helical structure. We will present the detailed synthesis of the cage-shaped complex and its anion recognition.

Keywords : Tripodal Ligand; Bipyridine; Self-Assembly; Urea; Anion Receptor

複数の水素結合ドナー部位を骨格内にもつケージ型超分子錯体は、アニオンレセプター¹⁾や酸触媒²⁾などの機能性超分子として働くことが知られている。そこで本研究では、水素結合ドナー部位を複数もつキラルケージ型超分子錯体の構築を行った。まず、ピリジルウレア部位をもつ三重らせん鉄(II)錯体 $[\text{LFe}^{\text{II}}](\text{PF}_6)_2$ を合成し、これと $[\text{Pd}^{\text{II}}(\text{dppp})(\text{CH}_3\text{CN})_2](\text{OTf})_2$ を反応させたところ、骨格内にウレア部位を6つもつケージ型錯体が生成したことがNMRならびにESI-MSから支持された(Scheme, 単離収率58%)。NMRおよびMM計算により、このケージ型錯体はヘリケート構造をもつことが示唆された。本発表ではケージ型錯体の合成の詳細ならびにそのアニオン認識能について報告する。

Scheme Synthesis of a cage-shaped supramolecular complex with six urea moieties.



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