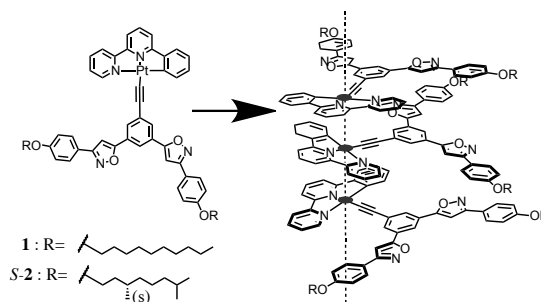


Helical self-assembly of platinum(II) complexes possessing bis(phenylisoxazolyl)benzenes

○ Midori Takayama¹, Toshiaki Ikeda¹, Takeharu Haino¹,

¹ Grad. Sc. Sci., Hiroshima Univ.

The helical self-assembly of tris(phenylisoxazolyl)benzenes is directed by intermolecular dipole–dipole interaction of an isoxazole ring.^{1–3} We have designed the platinum complexes **1** and **S-2** possessing bis(phenylisoxazolyl)benzenes moiety that are capable of assembling with the aid of dipole–dipole and Pt–Pt interactions. In this session, we will present the unique self-assembling behavior of Pt(II)phenylbipyridine complexes **1** and **S-2**.



Their self-assembling behaviors were studied using NMR, UV-vis, and CD spectroscopies. The ¹H NMR signals of **1** were concentration-dependent in chloroform-*d*₁. The aromatic protons shifted upfield, as increasing the concentration of **1**. This indicates that **1** formed stacked assemblies. The UV-vis absorption spectra of **S-2** in toluene and in chloroform were sensitive to temperatures. The MMLCT band appeared at approximately 500 nm upon decreasing the temperature. This is rationalized that Pt–Pt interaction facilitated the formation of the supramolecular assemblies of **S-2**. The CD spectra of **S-2** were measured in toluene and in chloroform. In toluene, the CD signals appeared when the solution was cooled from 323 K to 298 K (Figure 3), whereas the CD signals were completely turned off in chloroform even though the formation of its assemblies was evidenced. The helicity of the assemblies of **S-2** was most probably biased by the intermolecular interaction of the chiral side chains only in toluene.

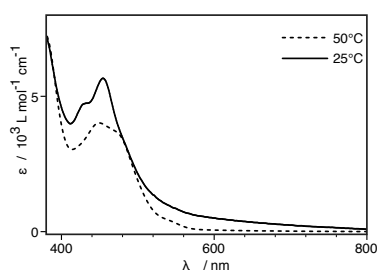


Figure 1. UV spectra of **S-2** (0.50 mmol L⁻¹) in toluene.

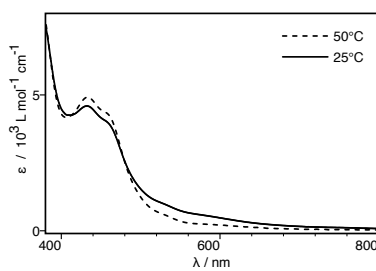


Figure 2. UV spectra of **S-2** (0.50 mmol L⁻¹) in chloroform.

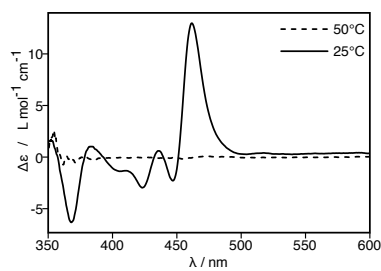


Figure 3. CD spectra of **S-2** (0.26 mmol L⁻¹) in toluene.

1) T. Haino, M. Tanaka, Y. Fukazawa, *Chem. Commun.* **2008**, 468–470.

2) M. Tanaka, T. Ikeda, J. Mack, N. Kobayashi, T. Haino, *J. Org. Chem.* **2011**, *76*, 5082–5091.

3) T. Ikeda, T. Masuda, T. Hirao, J. Yuasa, H. Tsumatori, T. Kawai, T. Haino, *Chem. Commun.* **2012**, *48*, 6025–6027.