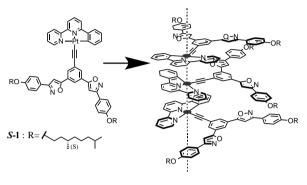
Helical self-assembly of platinum(II) complexes possessing phenylisoxazolylbenzene units

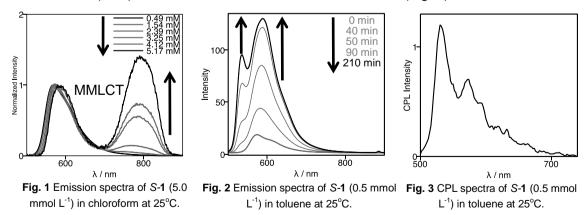
○<u>Midori Takayama</u>¹, Toshiaki Ikeda¹, Takeharu Haino¹, ¹ Grad. Sc. Sci., Hiroshima Univ.

The helical self-assembly of tris(phenylisoxazolyl)benzenes is directed by intermolecular dipole–dipole interaction of the isoxazole rings.^{1 – 3} We have designed the platinum complex S-1 possessing phenylisoxazolylbenzene moiety that is capable of assembling with the aid of dipole–dipole and Pt–Pt interactions. In this session, we will



present the self-assembling behavior and the optical properties of S-1.

The self-assembling behavior of S-1 was studied using NMR, UV-vis, emission, and CD spectroscopies. The ¹H NMR signals of S-1 were concentration-dependent in chloroform- d_1 . The aromatic protons shifted upfield upon increasing the concentration of S-1, indicating that S-1 formed stacked assemblies. The absorption band at 700 nm and emission band at 750 nm were appeared, assignable to MMLCT band. (Fig. 1) These results suggested the formation of the stacked assemblies via Pt–Pt interaction. The CD signals were silent in chloroform although the formation of the assemblies was evident. By contrast, the assemblies in toluene were CD active, indicating the formation of the helical structures. Accordingly, the helicity of the assemblies of S-1 was biased by the intermolecular interaction of the chiral side chains only in toluene. In addition, the emission appeared at around 580 nm was enhanced upon the assembly. (Fig. 2) The strong circularly polarized luminescence (CPL) was also observed in the assembled state. (Fig. 3)



T. Haino, M. Tanaka, Y. Fukazawa, *Chem. Commun.* **2008**, 468–470.
M. Tanaka, T. Ikeda, J. Mack, N. Kobayashi, T. Haino, *J. Org. Chem.* **2011**, *76*, 5082–5091.
T. Ikeda, T. Masuda, T. Hirao, J. Yuasa, H. Tsumatori, T. Kawai, T. Haino, *Chem. Commun.* **2012**, *48*, 6025–6027.