

Figure 1. Illustration of carbonyl-[4-(2,6-diCl-phenylamino)pent-3-en-2-onato] triphenylphosphine-rhodium(I) [Rh(2,6-diCl-Phony)(CO)(PPh₃)].

Keywords: rhodium, bidentate ligand, enaminketone, cupferon

MS29-P19 Luminescence study of anthracene derivatives and their complexes with silver

Noémie Voutier¹, Jing Chen¹, Katharina M. Fromm¹

¹. Department of Chemistry, University of Fribourg, Chemin du musée 9, CH-1700 Fribourg, Switzerland

email: noemie.voutier@unifr.ch

An excimer, or excited dimer, is formed when a fluorophore in its ground state interacts with a fluorophore in its excited state. For this to happen, the two fluorophores should be within Van der Waals contact distance. The fluorescence of such dimer is usually shifted to lower energies, and shows a broader band. This difference in emission makes such a system an interesting candidate for sensor application¹. Anthracene, due to its luminescence properties and possible formation of excimer, has been studied as sensor for selective recognition^{2,3}. In our group, an isonicotinic derivative of anthracene has shown interesting fluorescence properties and was designed to be used as a luminescent tracer placed on an antibacterial implant coating⁴.

We here study the luminescence behavior of anthracene molecules functionalized with nicotinic and isonicotinic acid, and their complexes with silver. In a previous study, the isonicotinic derivative (fig 1. b) formed coordination polymers with silver⁵ dependent on the solvent and anion considered. This compound showed excimer emission around 520nm in solid state, due to the stacking of the anthracene moiety. We are completing the study with the other 3 ligands (fig 1) and are interested in the influence of solvent molecules and anions in the solid state, therefore the packing of the molecules, on their luminescence.

References:

- ¹H. N. Lee, Z. Xu, S. K. Kim, K. M. K. Swamy, Y. Kim, S.-J. Kim and J. Yoon, *J. Am. Chem. Soc.*, **2007**, *129*, 3828
- ²F. Huang and G. Feng, *RSC Adv.*, **2014**, *4*, 484
- ³S. Malkondu, D. Turhan and A. Kocak, *Tetrahedron Letters*, **2015**, *56*, 162
- ⁴P. S. Brunetto and K. M. Fromm, *Chimia*, **2008**, *62*, 249
- ⁵J. Chen, A. Neels and K. M. Fromm, *Chem. Comm.*, **2010**, *46*, 8282

We thank Anne Schuwey and the Laboratoire Central of the University of Fribourg for their precious help.

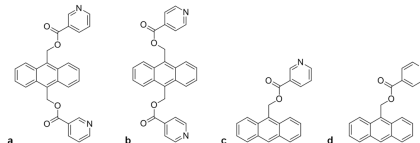


Figure 1. Structures of the anthracene derivatives a: anthracene-9,10-diybis(methylene) dinicotinate b: anthracene-9,10-diybis(methylene) diisonicotinate c: anthracen-9-ylmethyl nicotinate d: anthracen-9-ylmethyl isonicotinate

Keywords: Anthracene, excimer, solid state fluorescence, PXRD