第126回　OPERA研究交流セミナー
第118回　ISIT有機光エレクトロニクス研究特別室セミナー
第185回　未来化学創造センターセミナー

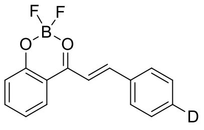
日時：　2015年7月1日(水)　13:30-
場所：　共進化社会システムイノベーション施設　２階大会議室

Photophysical Study of Borondifluoride Complexes: Toward Excited Charge Transfer NIR Emitters

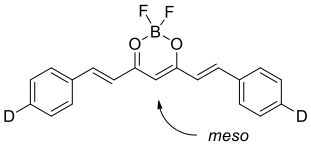
__Anthony D’Aléo__, Elena Zaborova & FrédéricFages

2’Hydroxychalcone- and Curcuminoid are naturally occurring dyes. Coordination compounds of those chromophores with borondifluoride complexes have been found to be fluorescent in solution and in solid-state. Upon appending strong donor end-groups, we have succeeded in shifting the visible electronic absorption into the red part of the spectrum with an emission that can reach the near infrared (NIR) for some compounds. The photophysical properties of those dyes will therefore be presented. Furthermore, organic fluorescent particles composed of those dyes can present emission in the NIR region with interesting photoluminescent quantum yields. To take advantages of those properties, we have synthesized new molecular structures and prepared particles containing curcuminoid borondifluoride complexes. Herein, we also present their optical properties in solution and in the “aggregated state” (solid state). The two-photon cross sections and the two-photon brightness are presented permitting to judge the NIR-to-NIR properties of such dyes.

In addition, upon appending a polyaromatic unit in *meso* position of the curcuminoid, an additional absorption band and emission, belonging to the *meso* group connected to the borondifluoride moiety, was observed as function of the polarity of the solvent. The properties of those dyes in term of steady state and time resolved spectroscopy were inspected revealing antagonist effect between those two emitting states.To obtain more insight into the photophysical properties of those dyes, ultrafast transient absorption spectroscopy was performed allowing the understanding of the relationship between the two chromophores in solvent of different polarity.



2'-hydroxychalcone-BF$_2$



Curcuminoid-BF$_2$

主催：九州大学　最先端有機光エレクトロニクス研究センター
：財団法人九州先端科学技術研究所（ISIT）
共催：九州大学　未来化学創造センター