

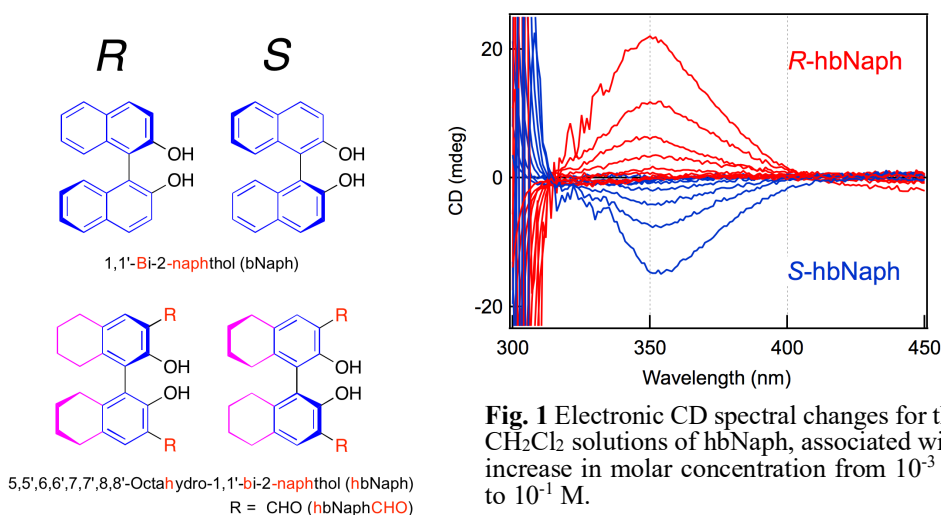
## 低分子系 $\pi$ 共役キラル分子の会合に伴うキラリティ増強

(千歳科技大<sup>1</sup>・東北大多元研<sup>2</sup>) ○小林 圭<sup>1</sup>・青木 桃佳<sup>1</sup>・坂井 賢一<sup>1</sup>・芥川 智行<sup>2</sup>  
 Chirality Enhancement of the Chiral  $\pi$ -Conjugated Small Molecule Induced by Aggregation (<sup>1</sup>*Chitose Inst. Sci. Tech.*, <sup>2</sup>*IMRAM Tohoku Univ.*) ○Kei Kobayashi,<sup>1</sup> Momoka Aoki,<sup>1</sup> Ken-ichi Sakai,<sup>1</sup> Tomoyuki Akutagawa<sup>2</sup>

We found that small  $\pi$ -conjugated molecules with axial chirality, such as binaphthol (bNaph), has potential to render an aggregate-induced circular dichroism (CD) band in a different wavelength region from the CD band due to the axial chirality under high concentration. In fact, it was observed for octahydrobinaphthol (hbNaph). The CD bands of chiral hbNaphs are located in the region of 250~300 nm. However, when the concentration of hbNaph was increased ( $10^{-3}$  M~ $10^{-1}$  M), a shoulder structure appeared near the edge of the absorption spectrum (350~400 nm). In this region, one could see the CD bands with different signs for *R*- and *S* enantiomers of hbNaph (Fig. 1). We also report that the aggregate of hbNaph exhibits blue fluorescence, although hbNaph is originally non-fluorescent.

**Keywords :** Chirality; Circular Dichroism; Aggregates; Fluorescence

我々はビナフトール(bNaph)のような軸不斉をもつ低分子系  $\pi$  共役キラル分子が、高濃度条件下において、分子由来の光学活性とは異なる波長領域に会合体由来の光学活性を与えることを見出した。実際、それはオクタヒドロビナフトール(hbNaph)で観測された。hbNaph の軸不斉に由来する CD バンドは 250~300 nm の波長領域に確認される。一方、hbNaph の濃度を上昇させると( $10^{-3}$  M~ $10^{-1}$  M), 吸収スペクトルの吸収端付近(350~400 nm)にショルダー構造が出現し、同じ波長領域に *R* 体と *S* 体で符号の異なる CD バンドの出現及び増強が確認された(Fig. 1)。加えて、元々蛍光性の無い hbNaph が、会合体形成の示唆される高濃度条件下で青色蛍光を示すことも見出した。



**Fig. 1** Electronic CD spectral changes for the  $\text{CH}_2\text{Cl}_2$  solutions of hbNaph, associated with increase in molar concentration from  $10^{-3}$  M to  $10^{-1}$  M.