

## 非フッ素化ヘプタメチンシアニン色素におけるベイポクロミズム

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Vapochromism of non-fluorinated HMCD (<sup>1</sup>*Department of Materials Science and Processing, Graduate School of Natural Science and Technology, Gifu University,* <sup>2</sup>*Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University,* <sup>3</sup>*Life Science Research Center Division of Instrumental Analysis, Gifu University,*) ○Mikiko Shibayama,<sup>1</sup> Yasuhiro Kubota,<sup>2</sup> Toshiyasu Inuzuka,<sup>3</sup> Kazumasa Funabiki<sup>2</sup>

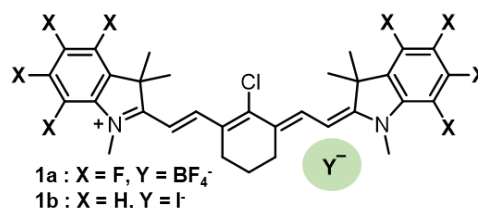
We previously reported a green to yellow vapochromism induced by exposure of amine vapor to filter paper adsorbed with heptamethine cyanine dye (HMCD) **1a**, which has fluorinated aromatic rings. However, vapochromism by exposure to amine vapor was not observed on the filter paper adsorbed with non-fluorinated HMCD.

In this study, non-fluorinated HMCD **1b** was adsorbed on silica gel (Wakogel C-200) instead of filter paper, and exposed to amine vapor. As a result, the silica gel adsorbed with non-fluorinated HMCD **1b** changed from blue-green to yellow, and then returned to its original blue-green color when left in air. Therefore, we found that non-fluorinated HMCD exhibits vapochromic properties by changing the medium in which it is adsorbed.

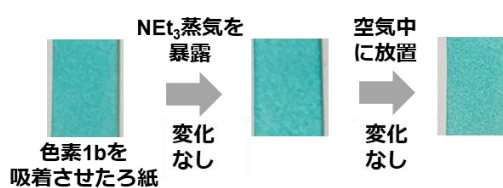
**Keywords :** organic dye; vapochromism; cyanine dye; amine vapor

我々は以前、芳香環がフッ素化したヘプタメチンシアニン色素 (HMCD) **1a** を吸着させたろ紙にアミン蒸気を暴露させることによって、緑色から黄色に変化するベイポクロミズムを報告した。しかしながら、非フッ素化 HMCD を吸着させたろ紙ではアミン蒸気の暴露によるベイポクロミズムは発現しなかった (Figure 2)。

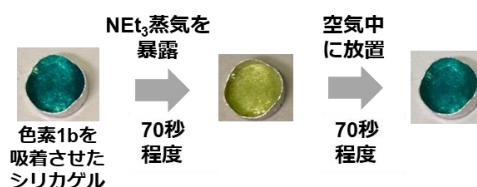
本研究では、非フッ素化 HMCD **1b** をろ紙ではなくシリカゲル (Wakogel C-200) に吸着させ、アミン蒸気を暴露した。その結果、非フッ素化 HMCD **1b** を吸着させたシリカゲルは、青緑色から黄色に変化し、その後、空气中に放置すると元の青緑色に戻った (Figure 3)。したがって、非フッ素化 HMCD は吸着させる媒体を変えることにより、ベイポクロミズム特性を示すことを発見した。



**Figure 1.** Structure of heptamethine cyanine dyes (HMCDs) **1a** and **1b**.



**Figure 2.** Pictures of no vapochromism of the filter paper adsorbed with non-fluorinated HMCD **1b**.



**Figure 3.** Pictures of vapochromism of the silica gel adsorbed with non-fluorinated HMCD **1b**.