

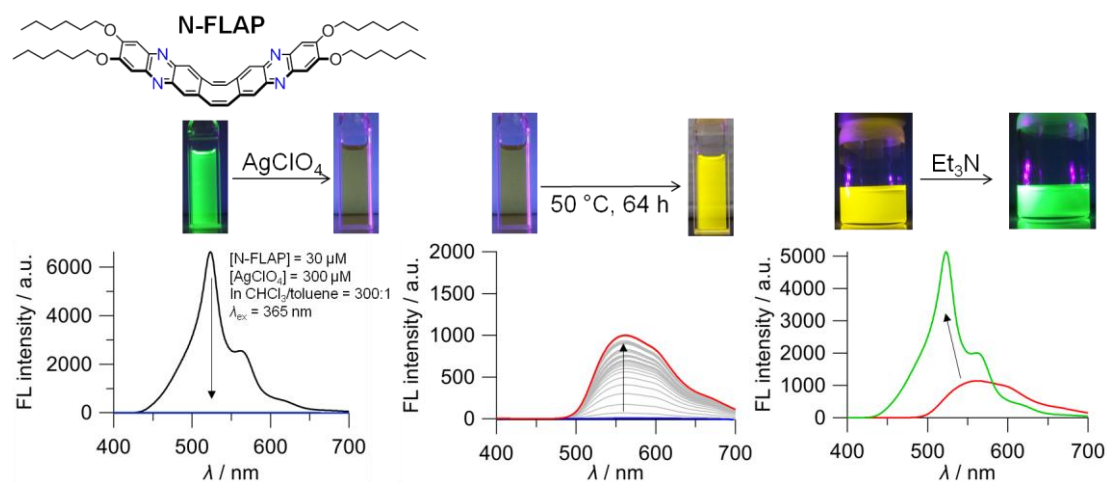
長時間にわたる多段階蛍光変化を伴う金属配位型分子集積

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Metal-Coordinated Molecular Assembly with a Long-Term and Multi-Step Fluorescence Change (Graduate School of Science, Kyoto University) ○Hayato Takahashi, Takuya Yamakado, Kensuke Suga, Nilanjan Dey, Shohei Saito

Flapping molecules (FLAPs) show a variety of functions based on flexible structural changes between V-shaped and planar forms. In this study, we observed a multi-step fluorescence change of a nitrogen-embedded FLAP (N-FLAP) solution by the addition of silver(I) perchlorate. The original green fluorescence was quickly quenched, followed by the appearance of yellow luminescence over several tens of hours upon heating. When triethylamine was added to the yellow luminescent solution, the original green fluorescence was recovered, indicating that the fluorescence change was reversible. In this presentation, we will discuss the mechanism of the multi-step fluorescence change based on the time variation of the NMR spectra and the supramolecular structure suggested by cryo-TEM images.

Keywords : Supramolecule; Fluorescent molecule; Metal complex; Silver ion; 2D sheet

光機能分子 FLAP は V 字型と平面型の間の柔軟なコンフォメーション変化による蛍光応答に基づく多彩な機能を発現する^{1,2)}。今回、配位可能な窒素原子をもつフェナジンを骨格に導入した N-FLAP³⁾の溶液に過塩素酸銀(I)溶液を加えたところ、もとの緑色蛍光が直ちに消光し、加熱によりその後数十時間かけて黄色発光が現れる多段階蛍光変化が観測された。またこの黄色発光を示す溶液に対しトリエチルアミンを添加すると、もとの緑色蛍光が回復し、蛍光変化が可逆であることが分かった。本発表では NMR スペクトルの時間変化や cryo-TEM 画像などから超分子構造の段階的な形成メカニズムを推測し、長時間にわたる多段階蛍光変化の謎に迫る。



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