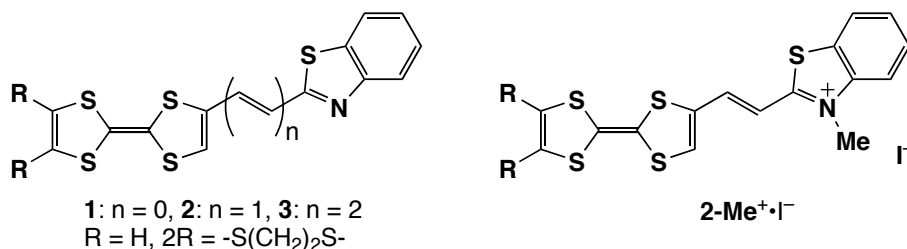


Development of Photo-functional Materials Using TTF derivatives Containing a 1,3-Benzothiazole Ring

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In the recent study of organic conductors, much interest has been focused on the development of new functional materials possessing multiple functionalities such as conductivity, magnetism and photonics and so on. Among them, interactions between conducting properties and photonics are also investigated in photoconducting materials and solar cells. Recently we focused on the development of photo-induced conducting materials based on the organic conductors and we reported new TTF derivatives substituted with 2,5-Diphenyl-1,3,4-oxadiazole (PPD) part which shows strong fluorescence and can be used as an antenna for photo-excitation [1,2]. On the other hand, 1,3-benzothiazole (BTA) ring is also known as a key part for photo-functional organic materials and has been used as cyanine dyes. Therefore, we designed new TTF derivatives **1-3** connected to the BTA part directly or through alkene spacers to realize novel photo-switchable conducting materials and photo-electric conversion materials. In this presentation, we will discuss about the synthesis, structures and physical properties of molecules **1-3** and N-methyl substituted cyanine-type salt **2-Me⁺·I⁻**. Furthermore, we will report on the photo-induced conductivity using a single crystal of molecule **2** (R = H) and photo-electric conversion functionality using thin films of these molecules that were spin-coated on ITO-coated glass substrate.



References

- [1] H. Fujiwara *et al.*, Tetrahedron Lett. 49 (2008) 7200.
- [2] H. Fujiwara *et al.*, J. Phys.: Conf. Ser. 132 (2008) 012025.