

Synthesis of a π Extended Tetrathiafulvalenoquinone-1,3-dithiolemethide Derivative and its Aggregating Property of metal compounds

Kazumasa Ueda¹, Kenta Suzuki¹, and Kengo Suzuki¹
¹Department of Engineering, Shizuoka University, Japan
Email: tkueda@ipc.shizuoka.ac.jp

Fabrication of molecular based magnets or magnetic metal aggregations on several substrates is an attractive field because of their potential use for high-density information storage. Although many deposition methods for isolated or small aggregates onto several substrates were performed, control of the position and distance between them is one of the remaining subjects of these fabrications. Our approach to overcome this subject is arranging magnetic component aggregations in crystal using various templates with desired morphology to direct formation of the aggregation. Tetrathiafulvalenoquinone-1,3-dithiolemethide derivatives are one of the good candidate for constructing such templates. Because tetrathiafulvalenoquinone-1,3-dithiolemethide derivatives often form porous structures in their crystals and capture inorganic anions. But the size of the porous structures was not enough to capture molecular based magnets or magnetic metal aggregations in it. In order to enlarge the size of porous structures, we extended the size of tetrathiafulvalenoquinone-1,3-dithiolemethide derivatives. The derivative was synthesized as follows. Bis(tetraethylammonium) bis(2,3-(bisethylthio)tetrathiafulvalenyl-6,7-dithiolato) zinc complex was reacted with 5 equiv. of 2-(methylthio)-1,3-dithiole-2-oxo-4,5-dithiolanium tetrafluoroborate in THF/DMF (1:1 v/v) solution at room temperature under nitrogen. After purification of reaction mixture bis(methylthio)tetrathiafulvalenothioquinone-1,3-dithiocarbonatodithiolemethide (**1**) was isolated as a dark green crystal. When **1** was reacted with an excess of P(OEt)₃ in toluene at 100 °C, a π extended compound (**2**) was obtained as a black crystal.

Here we present results on the synthesis of **2**, investigation of its crystal structure and aggregating property of metallic compounds.

