

Preparation and Photoluminescence Properties of Inorganic-Organic Hybrid Nanosheets by surface modifying method

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INTRODUCTION

Nanosheets is a very interesting material because it is said that it was almost composed only of the surface. So, their thickness is in the molecular range. Thus, It might show the singular phenomenon very much, and an interesting report is done in various areas though nanosheets is very sensitive. Therefore, it can be expected to show a very interesting character nanosheets if quite different materials can be united.

In the present study, it reports that the material of an inorganic/organic hybrid type was able to be made by an easily surface modifying method and an interesting characteristic was able to be confirmed from the viewpoint of photoluminescence.

EXPERIMENTAL

Starting materials $\text{Gd}_{1.4}\text{Eu}_{0.6}\text{Ti}_3\text{O}_{10}$ -nanosheets were prepared as described Ida et al¹⁾. We approached modified nanosheets through two methods. One was “Protein-modifying method” and the other, “Functional group-modifying method”. Both of them could be easily-administered very much. Photoluminescence of these modified nanosheets was determined by using a Spectrofluorophotometer FP-6500 (JASCO, Japan) with a 150-W Xe Lamp at room temperature. Another characterization was analyzed by XRD, XPS, SEM, AFM, and ICP measurements.

RESULTS AND DISCUSSION

1: Protein-modifying method

This method could be easily-administered and could modified nanosheets a wide variety of protein. The condition of product materials was turned into by type of protein and pH value of solution. In addition, these protein-modified nanosheets was indicative of interesting reaction by interaction between DNA and excitation spectra shifted.

2: Functional group-modifying method

This method could build multiple functional groups into nanosheets, not intercalation but covalent attachment. We found that photoluminescence intensity of nanosheets were affected by means of introduced into multiple functional groups and density.

REFERENCE

- 1) S. Ida, et al., “J. Am. Chem. Soc.” 2008, 130, 7052-7059.