

物理学教室

物性コロキウム

日時：2016年2月17日(水) 10:30-11:30

場所：理学研究科合同B棟745号室 (745, Science complex B)

講師：Yoong Ahm Kim (Chonnam National University, Korea)

題目：Optical Sensitivity of Mussel Protein-Coated Double-Walled Carbon Nanotube on Iron-DOPA Conjugation Bond

概要：

The optical properties of semiconducting carbon nanotubes are respond sensitively to external conditions through the formation of chemical bonds. In order to detect the iron-3,4-dihydroxy-L-phenylalanine (DOPA) conjugation bonds with metal ions, individually dispersed double-walled carbon nanotubes (DWNTs) suspension was prepared via a homogeneous coating of mussel protein adhesive (MPA). MAP exhibited a high ability of individually dispersing the bundled DWNTs through strong physical interactions with outer tubes. We demonstrated sensitively altered optical properties of DWNT suspension upon addition of FeCl_3 solution via the formation of coordinative bonds between DOPA in MAP and Fe^{3+} ion. The iron-DOPA bonds acted as electron acceptors and thus provided a favorable non-radiative channel for the optical depression of semiconducting inner tubes in DWNT suspension. Several physical and chemical effects on the sensitively quenched photoluminescence of semiconducting inner tubes were explained based on the iron-DOPA bonds. We also observed that the DOPA groups in MAP were fully saturated at ca. 376.7 mol% of Fe^{3+} ions for MAP.

連絡先：齋藤 理一郎 (795-7754)

☆ 10:15 よりコーヒー、紅茶、お菓子を用意します。カップを持ってお集まり下さい。

世話人：岩井 伸一郎 (795-6423) 松井 広志 (795-6604)
村島 隆浩 (795-5718) 泉田 渉 (795-6475)