



第236回 OPERA研究交流セミナー

第227回 ISIT有機光エレクトロニクス研究特別室セミナー

第294回 未来化学創造センターセミナー



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場所: ISI棟3階 セミナー室

High-Performance Luminescent Materials Using Structural Constraint

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Stability under excitation is critical to nearly all applications of luminescent materials. Nonradiative decay pathways that cause photobleaching or decomposition limit the usefulness of organic semiconductors in electronics, bio imaging, and photocatalysts. Here we describe new pi-conjugated systems with locked planarity designed to limit nonradiative decay. We use s-heptazines and imidazoacridines as strong electron acceptors, and azatriangulenes as electron donors to give materials exhibiting thermally activated delayed fluorescence (TADF), room-temperature phosphorescence, and two-photon absorption. These materials exhibit reduced photobleaching, large two-photon cross-sections and photoluminescence quantum yields near 100%. We also use scanning tunneling microscopy on Ag(111) to probe the electronic interactions of these materials on surfaces. This lecture will also describe the use of TADF materials in luminescent nanoparticles for bioimaging, and as photocatalysts for high-energy organic transformations useful to drug discovery campaigns.

**主催:九州大学 最先端有機光エレクトロニクス研究センター
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