第４８回　未来化学創造センター セミナー

Global COE Seminar No. 95 “Science for Future Molecular Systems”

共催：九州大学グローバルCOEプログラム「未来分子システム科学」

技術研究組合BEANS研究所　（第7回BEANSセミナー）

"Exiton Dynamics in Electroluminescence Materials"

Dr. Pavel Anzenbacher, Jr.

Associate Professor of Chemistry Center for Photochemical Sciences,
Department of Chemistry, Bowling Green State University,

Achieving control over the dynamics and migration of excited states is crucial for maximizing the performance of organic light-emitting diodes (OLEDs), and triplet excited states are of particular importance as the electron-hole recombination generates a large fraction of triplets in both small-molecule and polymer-based devices. To increase the OLED efficiency, phosphorescent emitters are preferred, but few triplet-emitting materials possess suitable charge-transport properties. Therefore, harvesting nonradiative triplets from semiconductor host materials by phosphorescent emitters (dopants) is the most frequently used approach. Here, the precise alignment of the triplet energy levels in both the host and dopant is essential for effective triplet energy transfer. Irregular distribution of the dopant within the host complicates achieving control over the effective rate of energy transfer in the doped materials. To utilize all excited states generated by the electron/hole recombination, materials capable of self-assembling to form alternating host-guest domains are of practical advantage. We designed host-guest materials with suitably aligned singlet and triplet energy levels, which exhibit enhanced OLED output by exploiting intramolecular energy transfer via the molecular photonic wire behavior. In experimental bilayer OLEDs fabricated using the photonic-wire materials with the best triplet level alignment, an order of a magnitude increase in efficacy was obtained due to facile triplet energy transfer. In summary, we present the preparation of self-organized electroluminescent triads, a detailed study of the singlet and triplet exciton dynamics, and the relationship between their exciton dynamics and OLED performance.

Admission Free

皆様のご参加をお待ちしております。

2009/11/16 (月) 15時00分より
ウエスト4号館　315号室

16th Nov. 2009　3:00 p.m ～
W4-315 (Ito Campus)

連絡先：安達千波矢
adachi@cstf.kyushu-u.ac.jp
TEL: 092-802-3306