

先導物質化学研究所講演会

E-Z Photoisomerization: Principles and Applications

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日時：平成 24 年 8 月 31 日（金）午後 3 時 30 分から

場所：理学部化学科第 3 講義室（理学部 2 号館 2 階 2273 号室）

The *trans-cis* (*E-Z*) photoisomerization of alkenes is one of the most thoroughly investigated reactions in molecular photochemistry, and it plays an important role in molecular, biological, and materials photochemistry. Among the various alkene chromophores, stilbene and its derivatives are crucial in the current understanding and application of photoinduced *trans-cis* isomerization of alkenes. In this talk, the photoisomerization mechanism of alkenes, particularly *trans*-stilbenes will be briefly discussed. Our application of the *E-Z* isomerization in molecular devices will be briefly mentioned, as this part has been presented in the lecture on Aug 3. A major discussion will be its application as a mechanistic probe on the twisted intramolecular charge-transfer (TICT) state of *trans*-aminostilbenes. The formation of a non- or weakly emissive TICT state is often invoked to account for the fluorescence quenching of a push-pull π -system in polar solvents. However, whether a bipolar system really forms a TICT state is often controversial. Understanding the structural nature of TICT states is important in the design of new fluorescent probes and nonlinear optical materials. Another system of interests is the amino derivatives of the Green fluorescence protein (GFP) chromophore (ABDIs). The decay mechanism of the parent GFP chromophore has been extensively investigated but a satisfactory conclusion has not been settled. Relatively little is known about the effect of the solvent-solute hydrogen bonding (SSHB) to the imidazolinone group on the fluorescence quenching of the chromophore. We found that the photoisomerization of ABDIs is strongly affected by SSHB.



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