

## Molecular Dynamics of Photo-induced Singlet Oxygen in Solid Phase

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The reactive oxygen species (ROS) which are generated from the photosensitizer (PS) by photo-induced are initially formed to two types of oxygen molecules such as super oxide anion and singlet oxygen. Super oxide anion and singlet oxygen were generated through charge transfer process (Type I) and energy transfer process (type II) from the triplet state of photosensitizer to triplet state of oxygen, respectively. One of the ROS, singlet oxygen (Type II reaction) has been studied to the various bio-medical applications such as photodynamic therapy (PDT), sterilization, and cell cycle control with photofunctional materials. Although these studies have been made, quantitative and qualitative analyses for the deactivation mechanism of the singlet oxygen in solid phase are not yet investigated in details.

In this study, we carried out singlet oxygen deactivation dynamics in solid phase with ROS indicator compounds decomposition experiments and time-resolved spectroscopy method. From the results, the mechanisms of singlet oxygen deactivation dynamics in solid phase are proved.

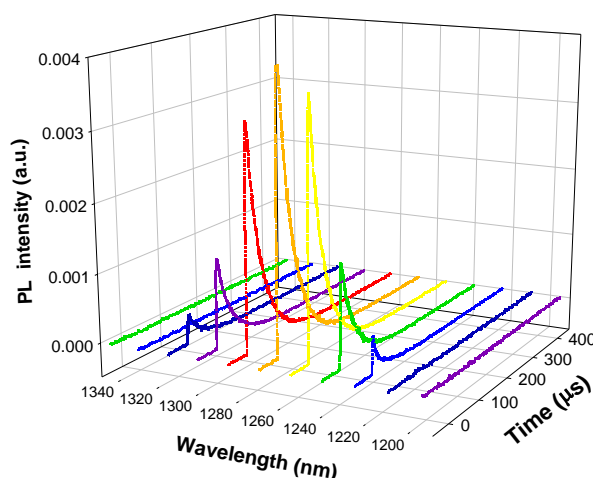


Figure 1. Time and wavelength resolved singlet oxygen PL spectrum.