

低次元材料の光反応促進現象

(新潟大自然¹) ○由井 樹人¹

Enhanced Photochemical Reactions on Low-dimensional Materials (¹ *Department of Materials Science and Technology, Faculty of Engineering, Niigata University*) ○Tatsuto YUI,¹

The chemical reaction in homogeneous solution proceeds via diffusion and collision processes. In many cases, chemical reactions do not proceed the diffusion and collision processes. Especially, photoreactions strongly affects the diffusion processes, due to the photoreaction starts the electrically excited state having very short lifetime. Thus, this is a one of the important factors in lowering the efficiency and selectivity of photochemical reactions. On the other hand, selective and highly efficient reactions proceed in the bio systems, due to the nano-ordered fixation of reactant within the systems. We have reported that the molecular fixation techniques of dyes on the low-dimensional materials, such as clay minerals, and found that unique photochemical reactions. We will present here the nano-ordered molecular orientation and enhancement the photochemical reactions on the surface of the low dimensional materials.

Keywords : Photoreaction; Low-dimensional Materials; Clay; Dyes; Molecular Orientation

均一溶液の化学反応は、溶質の自由拡散に支配されるため、基本的には拡散速度以上の化学反応は進行しない。特に光化学反応は、短寿命な光励起状態からその反応が進行するため拡散の影響を顕著に受ける。一方、生体における化学反応は、反応基質をナノレベルで精密に配置することで、高効率かつ高選択的な化学反応を進行させている。我々は、分子のナノ配列技術として粘土鉱物をはじめとする様々な低次元材料と光機能性分子との複合化をおこなってきた。本発表では、低次元材料への分子の固定・配列化技術および配列・固定化に伴う光反応の促進現象に関して論ずる予定である。