

Requests for Collaboration

<p>Name: Seiya Kobatake, Ph.D. Current position: Professor E-mail address: kobatake@a-chem.eng.osaka-cu.ac.jp</p>	
<p>Research Interests</p> <ul style="list-style-type: none">● Photofunctional molecules and polymers● Solid state property changes of photochromic organic crystals● Light-starting irreversible thermosensors	
<p>Creative Achievements in The Application of New and Existing Science and Technology</p>	
<p>(1) Photofunctional molecules and polymers Photoresponsive photochromic molecules and polymers were synthesized and developed for application to optoelectronic devices: multi-colored polymers, photosensitive materials, P-type photochromic materials, T-type photochromic materials, molecules for a write-by-light/erase-by-heat recording system, and fluorescence switching molecules.</p> <p>(2) Solid state property changes of photochromic organic crystals To apply photochromic diarylethene crystals, the materials are required to change large physical property by photoirradiation. We have developed photoinduced crystal shape changes of diarylethene microcrystals. In the photoinduced crystal shape changes, there are contraction/expansion, bending, twisting, and so on, which depend on the molecular structure and the size of the crystal.</p> <p>(3) Light-starting irreversible thermosensors We have developed the light-starting irreversible thermosensor that works at low temperature. we have designed and synthesized thiophene-<i>S,S</i>-dioxidized diarylethenes having bulky substituents at the reactive positions which can suppress the photocycloreversion reaction and exhibit the thermal irreversible bleaching reaction at low temperature.</p>	
<p>Research Topics and Materials That I Want to Collaborate</p> <ul style="list-style-type: none">● Photoresponsive materials that can be given for collaboration.● Application of photomechanical organic materials	
<p>A List of 5 Key Publications</p> <p>[1] Control of photomechanical crystal twisting by illumination direction D. Kitagawa, H. Tsujioka, F. Tong, X. Dong, C. J. Bardeen, <u>S. Kobatake</u> <i>J. Am. Chem. Soc.</i>, 140, 4208-4212 (2018).</p> <p>[2] Fluorescence On/Off switching in nanoparticles consisting of two types of diarylethenes T. Nakahama, D. Kitagawa, H. Sotome, T. Fukaminato, S. Ito, H. Miyasaka, <u>S. Kobatake</u> <i>ACS Omega</i>, 3, 2374-2382 (2018).</p> <p>[3] Photochromism of diarylethene molecules and crystals: Memories, switches, and actuators M. Irie, T. Fukaminato, K. Matsuda, <u>S. Kobatake</u> <i>Chem. Rev.</i>, 114, 12174-12277 (2014).</p> <p>[4] Thermal bleaching reactions of photochromic diarylethenes with thiophene-<i>S,S</i>-dioxide for a light-starting irreversible thermosensor H. Shoji, <u>S. Kobatake</u> <i>Chem. Commun.</i>, 49, 2362-2364 (2013).</p> <p>[5] Rapid and reversible shape changes of molecular crystals on photoirradiation <u>S. Kobatake</u>, S. Takami, H. Muto, T. Ishikawa, M. Irie <i>Nature</i>, 446, 778-781 (2007).</p>	