

Photo-responsive Polymers: Azo dye containing polymers

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Abstract

Azo dyes containing materials have been studied intensively over the past decades owing to the ability of the dyes to change shape from an elongated to a more globular form; i.e. ability to isomerize upon light absorption; a photo-reaction which brings about a wealth of applications including switching, and data storage and holography, and gratings, and nonlinear optical effects, and tweezing, and actuation and photomechanics, and micro-nanomachines, and so on. Books and reviews summarize the field. In azo-polymers, photoisomerization of the azo dyes enhances molecular mobility below the polymer's glass transition temperature (T_g); a phenomenon which is at the origin of photo-assisted poling and surface relief gratings. Photo-enhanced molecular mobility below T_g , with implication of controlling materials mechanical properties, has received considerable interest both from fundamental and applications point of views, and photo-orientation by photoselection is no exception in this regard. Indeed, several research groups studied photo-orientation of azo-dyes by photo-induced birefringence (PIB), for more than three decades, in a number of materials systems, especially azo-polymers, with the aim of understanding and optimizing materials properties for, for example, data storage and polarization holography. I will talk about photoreactive polymers for optics, both from fundamental and applications point of views.

Biography

Doctor Zouheir was working as a Professor in Handai Frontier Research Center, Osaka University, Suita, Osaka, Japan at present he is working as an Associate Professor, School of Science & Engineering Al Akhawayn University in Ifrane. He also worked as an Associate Professor, Department of Applied Physics, Osaka University, Suita, Osaka, Japan. He served as a Senior Scientist, Department of Applied Physics, Osaka, University, Suita, Osaka, Japan. He completed his Postdoctoral Research in Center on Polymer Interfaces and Macromolecular Assemblies: Stanford University, IBM Almaden and University of California, Davis, National Science Foundation funded partnership; at the Department of Electrical and Computer Engineering, University of California, Davis, CA.

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