Issue 2, 2012

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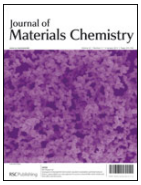

From the journal:
Journal of Materials Chemistry

Photomechanical mechanism and structure-property considerations in the generation of photomechanical work in glassy, azobenzene liquid crystal polymer networks†

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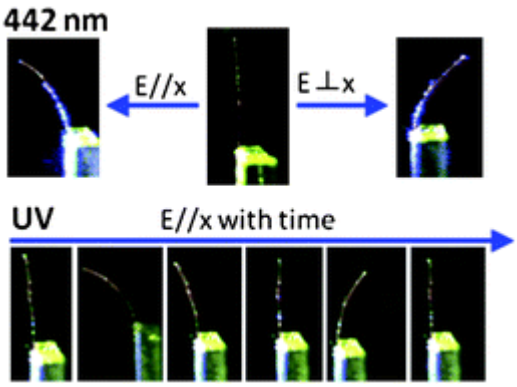
Abstract

Azobenzene-functionalized polymeric materials have proven capable of shape adaptive responses when irradiated with light. This work focuses on isolating the fundamental differences between the photogenerated mechanical output of glassy, polydomain azobenzene liquid crystal polymer networks (azo-LCN) upon exposure to either UV and blue-green irradiation. Profound differences in the fundamental photochemical mechanism are identified through spectroscopic examination of representative materials before and after irradiation with UV or blue-green light. The photomechanical response is further elucidated in structure-property examination to ascertain the role of crosslink density, azobenzene concentration, and azobenzene connectivity (crosslinked or pendant) on the photomechanical output.



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https://doi.org/10.1039/C1JM14017E

Submitted
17 Aug 2011

Accepted
17 Oct 2011

First published
09 Nov 2011

Citation
J. Mater. Chem., 2012, **22**, 691-698

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