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Optically Fixable and Optically Elastic Photomechanical Responses in Azobenzene Liquid Crystal Polymer Networks TIMOTHY WHITE, KYUNG MIN LEE, RICHARD VAIA, TIMOTHY BUNNING, Air Force Research Laboratory, Wright-Patterson AFB — Photoresponsive behaviors in azobenzene functionalized polymers have seen widespread interest for a variety of applications as adaptive materials. In a series of recent works, we have distinguished the photomechanical response of polydomain, monodomain and twisted nematic glassy azobenzene liquid crystal polymer networks (azo-LCNs). Interestingly, these materials primarily exhibit optically fixable shape memory to blue-green irradiation, but in some instances can exhibit "optically elastic" (muscle-like) responses. Towards this end, this contribution will summarize the photomechanical responses of these materials and illustrate some of the underlying contributors that dictate fixable or elastic responses upon removal of the irradiation.

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