

Abstract Submitted
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Revealing Hidden Time Dependence Using Polarized Light in Photothermal Studies DAEHA JOUNG, MARSHALL THOMSEN, DONALD SNYDER, Eastern Michigan University — A study of polymer properties was conducted by photothermal methods. As a pump beam irradiates a sample, some of the optical energy is converted to thermal energy. This conversion of energy produces localized deformation of the surface, a thermal bump, due to thermal expansion. The characteristics of a thermal bump depend on thermal, optical, and mechanical properties of the sample. The bump is detected by a weaker probe beam. The bump changes the nature of the reflected probe beam, allowing us to observe physical changes of the sample. By using a polarized probe beam, we have observed that changes in the reflected beam are dependent on polarization. The resulting time dependence has not been observed in the absence of polarized light. A comparison of results using polarized light and non-polarized light can provide new insight into changes in structures of polymers.

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