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Photothermal studies of polymers using polarized light MARSHALL THOMSEN, DAEHA JOUNG, DON SNYDER, Eastern Michigan University — Visible light has been used as the pump beam in surface thermal lensing experiments involving nominally transparent polymers. A small portion of the pump beam is absorbed by the sample, producing local heating and a thermal bump. The nature of the bump depends on thermal, optical, and mechanical properties of the sample. The presence of the bump is detected by a weaker probe beam scattered off the surface. We have used a polarized probe beam and have observed the reflected beam as a function of polarization. The resulting time dependence is unlike anything observed in the absence of polarizers. These experiments suggest that photothermal techniques using polarized light can provide new insight into structural changes in polymers.

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