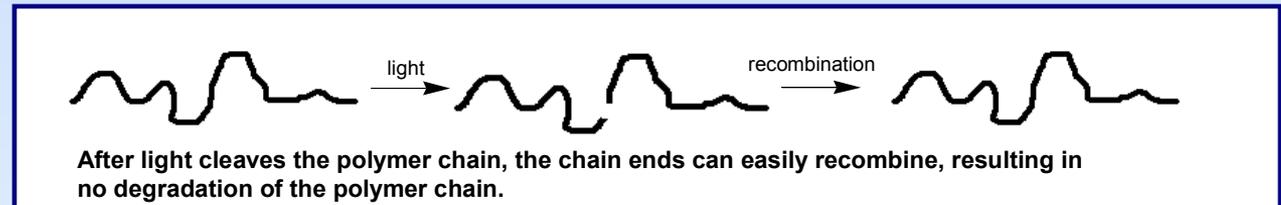


A Mechanistic Investigation of the Effect of Stress on the Photochemical Degradation of Polymers

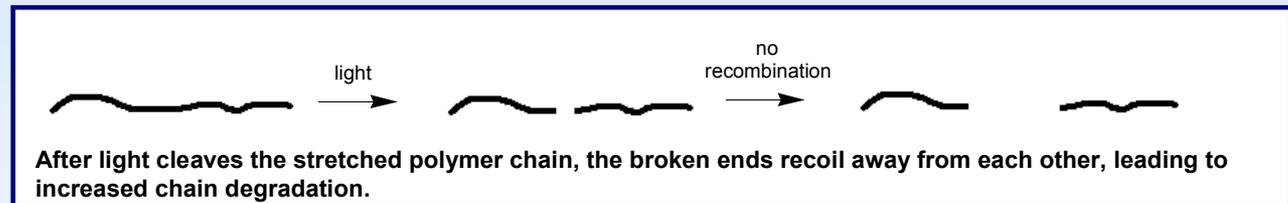
David R. Tyler, University of Oregon, DMR-0096606

- **Purpose:** to determine why stress increases the photochemical degradation rates of polymers.
- **Results:** we showed that when a polymer chain under stress is cleaved by light the two parts of the chain are less likely to recombine compared to a polymer that is not under stress. As shown in the pictures, this leads to enhanced degradation.

unstressed polymer



stressed polymer



- **Significance:** an understanding of the synergism between light and stress is essential for the accurate estimation of polymer lifetimes in commercial products and for the development of light-stabilizers.

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Education and Outreach:

- Bevin Jones, the graduate student working on this project, passes along her unbridled enthusiasm for polymer science to elementary school students in the Eugene area by participating in our department's K-12 outreach program.
- Dr. Rui Chen, the postdoctoral associate working on this project, works with the visiting summer undergraduates in my lab, patiently teaching them the fundamentals of polymer science and how to do research. All of the undergraduates she has worked with have chosen to major in polymer science or polymer engineering!

- All of my research group members participate in PolyCamp, a one-week, NSF-sponsored summer enrichment program designed to expose undergraduates to polymer science. The picture below shows the PolyCampers working with an RTV silicone.

