

## Happy Halloween from CPG!

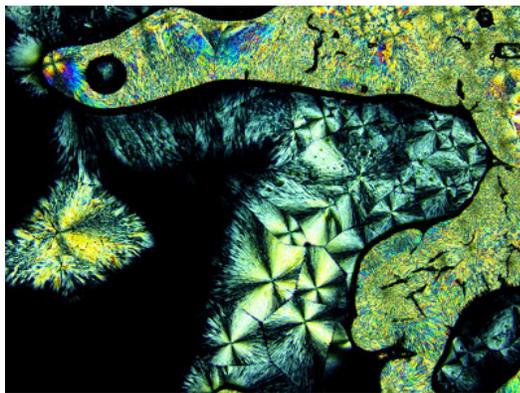
This newsletter summarizes testing techniques, materials, and new announcements from Cambridge Polymer Group.

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## Molecular Weight From Rheology

The molecular weight distribution of polymers strongly influences their properties, such as tensile strength, crack resistance, and solubility. Gel permeation chromatography is a commonly used technique to measure molecular weight distribution, but relies on the ability of the polymers to be dissolved in a solvent that is readily usable in a GPC column. Additionally, the molecular weight distribution is inferred from polymer standards, which should have a similar, if not identical, repeat unit to the unknown sample for the most reliable results. [Read more here.](#)

## Birefringence in Crystalline Polymers



Polarized light microscopy is an effective tool to examine the crystalline structure of materials. In this technique, a sample is placed between two polarizers which are oriented 90 degrees to each other, or are "crossed". Light is transmitted through the polarizers and samples into an objective. Light travelling through the first polarizer becomes polarized in the plane of the polarizer. When it hits the second polarizer, no light will be transmitted as the second polarizer (also called the analyzer) is oriented 90 degrees to the first polarizer, unless the sample is optically anisotropic. Optically anisotropic materials are ones where the optical properties are different when probed in different directions. They have a different refractive index, or speed of light, in different orientations

normally due to molecular alignment. [Read more here.](#)

## Making an Impact



CPG recently purchased a new impact tester, a CEAST 9050 (Instron). With both V-notching and blade notching capabilities, we can perform Izod impact testing on materials in compliance with ASTM D256, as well as impact testing on UHMWPE per ASTM F648. The pneumatic release option on the impact tester allows very reproducible results.

Cambridge Polymer Group, Inc. is an ISO 9001:2008 certified contract research laboratory specializing in polymeric materials. We provide routine analytical testing on materials, custom test design, failure analysis, consultation, instrumentation, custom polymer and hydrogel formulation, and out-sourced research.

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