Soft Substrates Create Surprisingly Stable Glass

**Scientific Achievement**
Researchers engineer a more rigid, dense glass thin film using vapor deposition on a soft, rubbery substrate.

**Significance and Impact**
This technique expedites the slow aging process needed to make glass more stable and durable, which could benefit glass’s wide range of scientific and industrial applications.

**Research Details**
- The elasticity of the soft substrate provides a new way to help control the glass’s structure and properties.
- The SMI beamline characterized the glass’s structure using grazing incidence wide-angle X-ray scattering.
- Gaining similar properties on rigid substrates would require 10 million times slower deposition.

Two-dimensional grazing incidence wide-angle X-ray scattering patterns for films deposited on silicon (a) and polydimethylsiloxane (b). The arrow denotes an additional scattering feature corresponding to molecular layering.


Work done in part at NSLS II