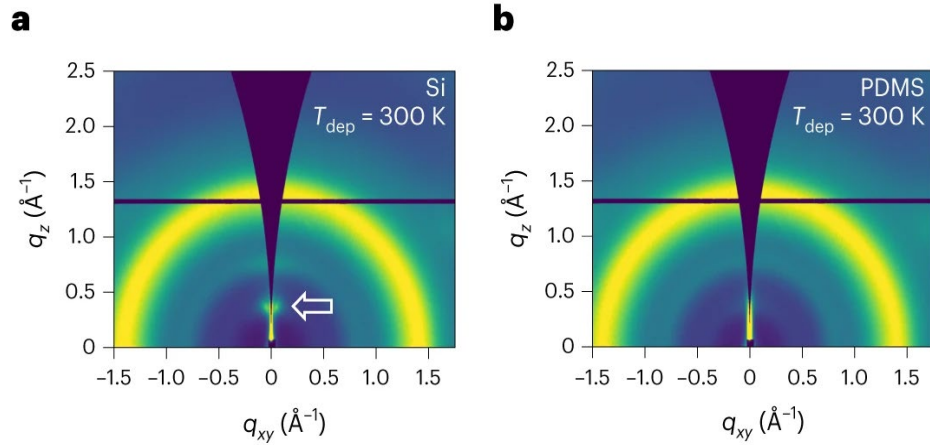


Soft Substrates Create Surprisingly Stable Glass



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.

P. Luo, S. Wolf, S. Govind, R. Stephens, D. Kim, C. Chen, T. Nguyen, P. Wasik, M. Zhernenkov, B. McClimon, Z. Fakhraai. High-density stable glasses formed on soft substrates. *Nat. Mater.* (2024). <https://doi.org/10.1038/s41563-024-01828-w>

Work done in part at NSLS II

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.