

A New Common Behavior for Glasses

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Materials scientists use rules that hold across different kinds of materials as powerful tools to understand material's fundamental behavior, to predict their properties and performance, and to design new materials.

Wisconsin MRSEC researchers have discovered a new common behavior for glasses: How fast atoms move on a glass surface is connected to how easily flow is activated for the same material as a liquid. This connection holds across all kinds of glasses and over many orders of magnitude in the speed of motion.

The connection lets scientists predict surface mobility, which is rarely measured, from liquid flow data, which is much more common. The fabrication of glasses by vapor deposition and their properties in thin film form, as they are used in cell phone displays, photovoltaics, and coatings, depends on their surfaces, so the connection is an important practical tool for glass materials design. It also points to deep, fundamental connections to how molecules move at solid glass surfaces and inside liquids, which is the topic of ongoing research.

