



PhD / Postdoc Opportunity: Atomic Structure, Kinetics, and Glass Formation of Metallic Glasses and Liquids

Key areas: Glass Forming Ability Crystallization Viscosity
Cleanroom Fabrication Sputtering Advanced Characterization

Our research group, the [Autonomous Alloy Discovery Lab](#) lead by Prof. [Sebastian Kube](#), has a postdoctoral position open to start anytime, or a PhD position to start in Spring or Fall 2027.

Background: This project will push on one of the major scientific frontiers facing our community: How do liquids behave at the atomic level? How does chemical composition determine the atomic structure of metallic liquids, and how does atomic structure in turn govern liquid kinetics including viscosity, diffusion, and crystallization? How do the kinetics change with temperature, especially on undercooling? Our understanding of these relationships is extremely limited, but crucial: Firstly, many materials are synthesized by solidification from the liquid state, so learning to predict and control their solidification pathway will enable new targeted synthesis approaches. Secondly, a deeper understanding of viscosity and crystallization will enable us to design new Bulk Metallic Glass alloys with exceptional properties and processability for commercial adoption. Interested candidates are invited to look at our [previous publication](#) most related to this project.

Scope of project: Within our group, the researcher will lead the following activities forward:

- (a) Prepare combinatorial libraries through cleanroom fabrication and sputtering synthesis.
- (b) Measure viscosity across many new alloy and glass systems using our [film inflation method](#).
- (c) Perform advanced characterization of structure and properties (e.g. synchrotron, TEM).
- (d) Develop new models to predict liquid structure and kinetics, and control solidification.
- (e) Leverage our cutting-edge tools for [rapid, autonomous experimentation](#) combined with AI.

Candidate qualifications: This opportunity is particularly well-suited for researchers with a background in materials science who wish to build expertise in metals and alloys, the glass state and the liquid state, and solidification. Experience in experimental methods including clean-room fabrication, sputter-deposition, and advanced materials characterization is especially valuable.

Why join this project?

- Build and apply expertise at the frontier of glass, liquid, and solidification physics.
- Leverage advanced measurement and characterization combined with modeling and AI.
- Join our interdisciplinary team to solve urgent technological and commercial challenges.

Get in touch today: Post candidates are invited to contact Sebastian.Kube@wisc.edu with a CV and compelling description of motivation and alignment. PhD candidates apply to our [program](#).