Research at BU — Computer Simulations of SiO$_2$

Katharina Vollmayr-Lee
Department of Physics & Astronomy

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(Summer) Research Students:

Laura Owens	Robin Bjorkquist
Sean G. McMahon	Landon M. Chambers
Christopher H. Gorman	Jakob A. Roman

& benefits in classroom

**Collaborations Beyond Bucknell:**

|	
Annette Zippelius	Jürgen Horbach
Horacio E. Castillo	Karina Avila

Computers:

J. Dreese, M. Harvey, B. Temelso, G. P. Shrivastav

Department of Physics & Astronomy

Computer Simulations of SiO₂ Glass
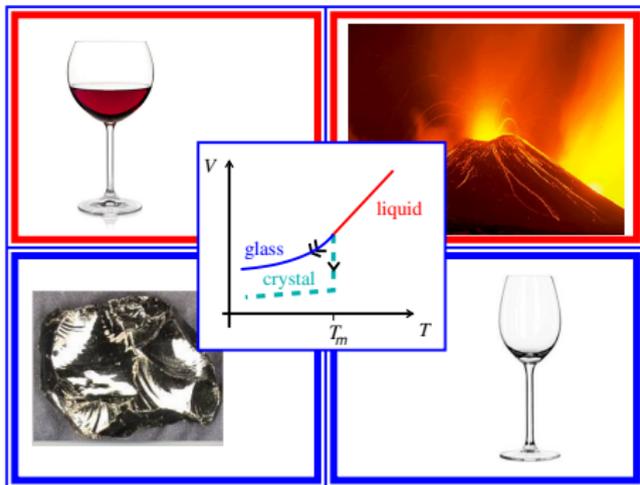
Viscosity vs 1/Temperature:

SiO₂ (here)

strong glass former

GeO₂

Glycerol

fragile glass former (compare below)

4Ca(NO₃)₂ 6KNO₃

log η [Poise] vs Tg/T
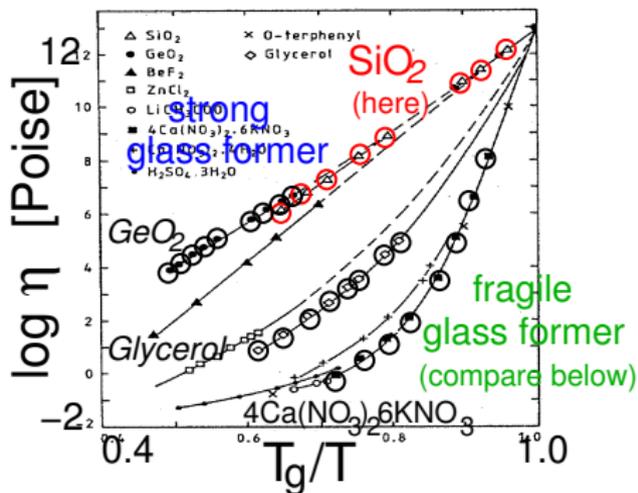
[C.A. Angell et al. 1976]

Hidden Figures:

Katherine G. Johnson

Euler's Method

Space Shuttle

Earth
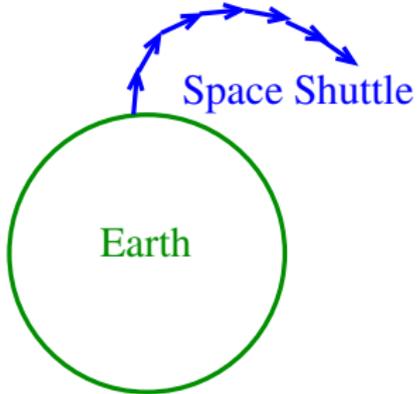
Molecular Dynamics Simulation:
SiO$_2$ glass:
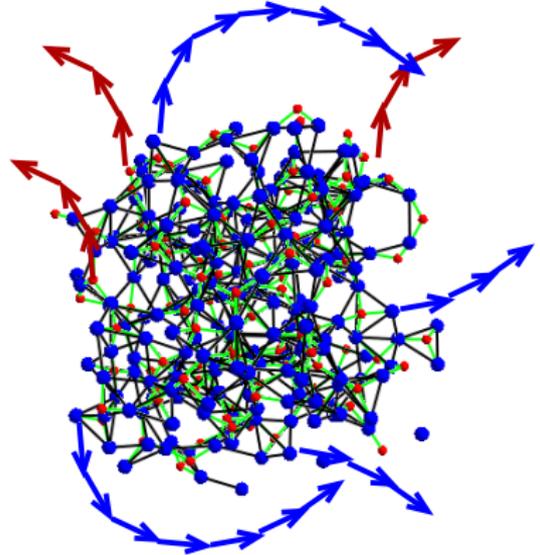
Single Particle Jumps:

Local Incoh. Interm. Scattering Function:
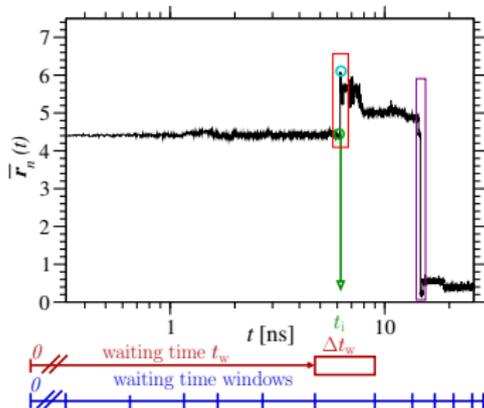
▶ t_w-dep.: no. jump. part., not size, not time in between jumps

Phys.Rev.Lett. **110**, 017801 (2013)
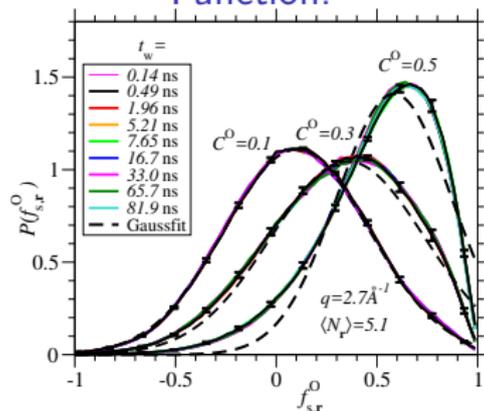
▶ scaling collapse

JCP Editor's Choice: J.Chem.Phys. **144**, 234510 (2016)

Similar results for fragile & strong glass formers!