



Showcasing research from Ceramics Materials Laboratory,  
Department of Materials Chemistry, The University of Shiga  
Prefecture, Hikone, Japan.

Deformability of Mg–aluminosilicate glass under high pressure  
and shear stress: dynamic coordination change of  $\text{Al}^{3+}$

Room-temperature flow strongly influences glass deformation and fracture, but its atomic-scale mechanism has been difficult to probe experimentally. By combining shear deformation under confining pressure with multi-probe analyses using electromagnetic radiation from microwaves to X-rays, we found evidence that flow in high-strength aluminosilicate glass involves dynamic rearrangement of  $\text{AlO}_4$  tetrahedra through transient higher-coordinated states. This provides new insight into the atomic mechanisms underlying glass deformation and fracture.

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See Akihiro Yamada *et al.*,  
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