Supplementary Figure 1. The viscosities of three different liquids as a function of temperature measured by the ESL technique.

The fluid flows and shear rates in the liquids were estimated following procedures described in refs. [37,38]. Supplementary Figure 2 shows the results for fluid flows for one such calculation for the Ti_{39.5}Zr_{39.5}Ni_{21} liquid at the nucleation temperature of 990 K, when it was cooled in vacuum with 5.7 V positioner and heater off condition.
Supplementary Figure 2. The fluid flow velocity distribution in a 6.0 mm diameter Ti$_{39.5}$Zr$_{39.5}$Ni$_{21}$ liquid at 990 K when the sample was cooled with a 5.7 V positioner and heater off condition. As is apparent from the color codes and arrow sizes, the flow velocity is maximum along the surface of the sample in a direction about 40° from the equator.

**Supplementary References**

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