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*Publication date:*  
2007

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Keding, R., Flügel, S., Ehrt, D., & Yue, Y. (2007). Electrical, rheological and thermal study of dynamic behavior in glass forming liquids. Abstract from International Congress on Glass, Strasbourg, France.

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# Electrical, rheological and thermal study of dynamic behavior in glass forming liquids

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The electrical conductivity, the viscosity and the thermal behavior of melts and glasses in the Na<sub>2</sub>O 2 SiO<sub>2</sub> system were measured in broad temperature range. The obtained data were analyzed with special focus to the non-Arrhenius behavior of the conductivity and the viscosity and the conductivity using the equation

$$\sigma = \sigma_0 \exp\left(\frac{-E_a}{k} \left(\frac{1}{t}\right)^f\right)$$

The deviation from the Arrhenius-behaviour i.e. fragility is quantified by the exponent *f* of the equation. The fragility of the Na<sub>2</sub>O 2 SiO<sub>2</sub> system is discussed in terms of kinetics and thermodynamics.

The application of the 3 different methods will allow to experimentally access the universal dynamic behavior of melts and glasses in a broad temperature range. In contrast to viscosity measurements conductivity measurements allows to trace the iso-structure relaxation times at temperature below and above T<sub>g</sub> using heating rates between 0.1 and 10 K/min. The interpretation allows a detailed description of the α and β relaxations in melts and glasses.