

Coupling Gibbs Energy and Viscosity Modeling

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ABSTRACT

Based on the associate species thermodynamic model, a new viscosity model is being developed for liquid melts of the $\text{SiO}_2\text{-Al}_2\text{O}_3\text{-CaO-MgO}$ system and sub-systems relevant to fuel slags, with the consideration of temperature, composition as well as structure dependences of viscosity.

The temperature-viscosity relationship is described by the modified Arrhenius model. The composition and structure are coupled by the associate species thermodynamic model, which has experimental basis and is easy to understand.

This new model describes the viscosities of studied systems by using only one set of model parameters, all of which have clear chemical-physical meaning.