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Modeling of enthalpy relaxation of glasses far from equilibrium

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The existing phenomenological models are not able to describe the enthalpy relaxation of the glasses far from equilibrium. In order to make this possible, we have made attempts to modify the existing models in the following three aspects. First, the width of glass transition region is a function of the cooling rate. Second, the relaxation time distribution consists of at least two regimes. Third, a reasonable configurational entropy (S_c) function is determined by testing three viscosity equations, i.e., AG, VFT, AM, MYEGA regarding the performance in modeling during both annealing and dynamic heating and cooling processes. In addition, the established exponential function is associated with α, and both slow and fast β relaxations. The modeling results show that the enthalpy relaxation of several oxide glassformers far from equilibrium can be well described.