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Structural origin of mixed modifier effects in silicate glasses

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ABSTRACT

As one of the most challenging problems in oxide glasses, structural origin of the so-called mixed modifier effect, which refers to non-additive changes of certain performances when one modifier species is substituted by another keeping the total modifier content constant, is still not fully understood despite much progress in the past few decades. In this work, according to the compositional design, series of silicate glassy samples were prepared. Based on the systematic characterization of the performances such as Vickers hardness, glass transition temperature, density and fragility, together with the detailed structural investigation and computational simulation, we try to understand the structural origin of the mixed modifier effect.

Keyword: silicate glasses, mixed modifier effect, structure

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