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# Two distinct structural domains for sub- $T_g$ relaxation in glass fibers

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Structural heterogeneity and its impact on structural relaxation during sub- $T_g$  annealing provide a key to better understand the dynamic slowing down near the glass transition temperature ( $T_g$ ). In this work we present our findings about sub- $T_g$  relaxation of the hyperquenched glass fibers with the composition of 20CaO-22MgO-58SiO<sub>2</sub>. This composition is highly unstable, since crystallization occurs slightly above  $T_g$ . The calorimetric curves show two separated relaxation peaks below  $T_g$ , and this implies that two distinct structural domains which are arrested in the supercooled liquid during hyperquenching. The first relaxation peak is much smaller than the second one. With increasing the annealing degree, the first one is vertically diminishing, while the second one shifts from lower to high temperature and is becoming smaller. This indicates that the two structural domains are correlated with each other. We also provide some insights into the relation between structural relaxation and nucleation.