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Dynamics of SiO_2: A Computer Simulation LANDON CHAMBERS, The Pennsylvania State University, USA, KATHARINA VOLLMAYR-LEE, Bucknell University, ROBIN BJORKQUIST, Reed College — Using molecular dynamics simulations, we study the dynamics of SiO_2 which undergoes a temperature quench from a higher temperature, $T_\mathrm{i} \in \{5000\,\mathrm{K}, 3760\,\mathrm{K}\}$ to a lower temperature $T_\mathrm{f} \in \{2500\,\mathrm{K},\ 2750\,\mathrm{K},\ 3000\,\mathrm{K},\ 3250\,\mathrm{K}\}$. We observe the system at the lower temperature as its dynamics changes from out-of equilibrium to equilibrium dynamics. Using single particle trajectories we identify "jumps" and "drifts" (particle motion between jumps). To characterize the dynamics we determine the size and duration of jumps and drifts as a function of waiting time, which is the elapsed time since the temperature quench until the time of the measurement. We find that out-of-equilibrium all investigated quantities are dependent on waiting time. With increasing waiting time the size of the drifts increases with increasing waiting time and becomes more comparable to jump sizes at larger waiting times. For large waiting times the system reaches equilibrium and all investigated quantities become independent of waiting time.

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