

Topic: Atomic mobility and boson peak behavior of phase change materials

Phase change materials (PCMs) store information in their amorphous and crystalline phases, which can be rapidly and repeatedly switched between these phases by heating using optical or electrical pulses. The properties of PCMs determine its functionality and success to a large extent. $\text{Ge}_2\text{Sb}_2\text{Te}_5$ (GST) is the most studied and utilized PCMs and enables phase change storage technology. In order to expand the PCMs market in the future, a continuous investigation into GST is required.

In the research work, we are studying the atomic mobility and boson peak behavior of GST to solve problems of reliability, thermal conductivity and thermal stability in PCMs. In addition, the impact of doping on the atomic mobility of GST and crystallization kinetics of different phases will be also presented. Because doped GST might improve the reliability of switching and effectively reduce the atomic mobility.