

Ultrafast Control of Resonant Bonding State in PCMs

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ABSTRACT

In this talk I will discuss how ultrafast lasers can be used to remove electrons from resonantly bonded states resulting in large changes in the optical properties of the material. By monitoring how the time-dependent change in optical properties and structural dynamics, we can show that the optical properties change on a timescale much faster than that required to heat and melt the lattice. This presents new opportunities to control material properties. At the end I will discuss a simple nano-structured device that benefits from ultrafast control of the resonant state.