

Broadband Picosecond Acoustics

Last Updated Thursday, 06 January 2011

Time domain techniques are a valuable alternative to Inelastic Scattering techniques to study phonon dynamics, especially when energy resolution is an issue. Building on a 1 kHz amplified Ti:sapphire laser source, we developed a novel pump-probe setup for broadband picosecond acoustics using a white-light continuum probe coupled to an optical multichannel analyzer. The system allows one to access, in a single measurement, acoustic parameters such as sound velocity and attenuation all over the bandwidth of the acoustic wave-packet launched by the pump pulse (40-400 GHz). With this setup we extend the kinematic range of inelastic scattering techniques in the unexplored gap between Brillouin visible/UV and Inelastic X-ray Scattering. See all the details in our recent manuscript appeared in Applied Physics Letters, which also populated the cover of the issue.