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Title:Applications of time-resolved terahertz spectroscopy in ultrafast carrier dynamics
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Abstract:Three time-resolved terahertz (THz) spectroscopy methods (optical-pump/THz-probe spectroscopy, THzpump/THz-probe spectroscopy, and THz-pump/optical-probe spectroscopy) are reviewed. These are used to characterize ultrafast dynamics in photo- or THz-excited semiconductors, superconductors, nanomaterials, and other materials. In particular, the optical-pump/THz-probe spectroscopy is utilized to investigate carrier dynamics and the related intervalley scattering phenomena in semiconductors. The recent development of intense pulsed THz sources is expected to affect the research in nonlinear THz responses of various materials.
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