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Title

Single-shot terahertz spectroscopy using pulse front tilting of an ultra-short probe pulse

Source

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Abstract

We developed a single-shot terahertz pulse measurement technique using pulse-front tilting of an ultra-short probe pulse and demonstrated single-shot terahertz spectroscopy. A transmission grating was used to introduce a sufficiently large pulse-front tilt angle. A measuring time range of 23.8 ps was achieved. The measured temporal waveforms were corrected in consideration of the nonlinearity arising from the crossed Nicols arrangement employed and the beam profiles of the probe and terahertz pulses. The characteristic spectrum of lactose was measured with a single terahertz pulse, and the effectiveness of our single-shot technique was confirmed by comparison with a conventional sampling method. (19 References).