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Abstract:We report on the far-infrared optical properties of melamine characterized by terahertz time-domain spectroscopy (THz-TDS). Transmission measurement reveals three low-frequency vibration modes at 1.99, 2.25, and 2.61 THz, which may provide fingerprints for direct melamine detection. By combining THz-TDS with Fourier transform infrared (FTIR) spectroscopy, an overall low-frequency optical response of melamine is presented in an extended spectral range of 0.2-6.2 THz. In this range, the low-frequency vibration mode at 3.96 THz is recorded via FTIR. The measured THz spectra are well fit by the multiple-oscillator model, thereby demonstrating that the low-frequency THz response of melamine is a consequence of the lowest four vibration modes.

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