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Title:THz wave polarization-controlled spectroscopic imaging for anisotropic materials

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Abstract:We present a polarization-controlled terahertz (THz) wave spectroscopic imaging modality to investigate the anisotropy of the detected materials. The polarization of the emitted THz wave is controlled by changing the relative phase between the fundamental and second-harmonic waves in the two-color laser-induced air plasma THz generation configuration. The THz wave polarization direction is extracted by measuring the two electric field amplitudes when the polarization of the incident wave is controlled to be horizontal and vertical. The anisotropy of the industrial Sprayed-On-Foam-Insulation (SOFI) is characterized by measuring its azimuthal angle dependent THz polarization response. This work demonstrates that THz wave polarization-controlled imaging technique can be used for highly sensitive industrial nondestructive inspection and biological related characterization.

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