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Title:Terahertz Time Domain Spectroscopy for Non-Destructive Testing of Hazardous Liquids

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Abstract:Hazardous liquids, liquid explosives and flammable liquids are characterized by means of terahertz time domain spectroscopy (THz-TDS) in analogy to existing non-destructive testing (NDT) strategies. Various polar liquids (alcohols, acetone, hydrogen peroxide, nitro methane) and non-polar aircraft and automobile fuels as well as organic solvents are characterized in the practically relevant, non-contact and non-destructive reflection geometry in the time domain. Absorption coefficients and indices of refraction of a representative set of these liquids are investigated in the spectral range between 0.1 THz and 1.1 THz in transmission configuration by two different set-ups either suitable for strongly or weakly absorbing liquids.

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