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Terahertz pulsed spectroscopy and imaging for pharmaceutical applications: A reviewSource
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Abstract
The terahertz region of the electromagnetic spectrum spans the frequency range between the infrared and the microwave. Traditionally the exploitation of this spectral region has been difficult owing to the lack of suitable source and detector. Over the last ten years or so, terahertz technology has advanced considerably with both terahertz pulsed spectroscopy (TPS) and terahertz pulsed imaging (TPI) instruments now commercially available. This review outlines some of the recent pharmaceutical applications of terahertz pulsed spectroscopy and imaging. The following application areas are highlighted: (1) discrimination and quantification of polymorphs/hydrates, (2) analysis of solid form transformation dynamics, (3) quantitative characterisation of tablet coatings: off-line and on-line, (4) tablet coating and dissolution, (5) spectroscopic imaging and chemical mapping. This review does not attempt to offer an exhaustive assessment of all anticipated pharmaceutical applications; rather it is an attempt to raise the awareness of the emerging opportunities and usefulness offered by this exciting technology. 