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### **Non-Destructive Evaluation (NDE) Applications of THz Radiation**

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The technology and applications of time domain terahertz (THz) imaging to non-destructive evaluation (NDE) will be discussed. THz imaging has shown great promise in 2 and 3 dimensional non-contact inspection of non-conductive materials such as plastics, foam, composites, ceramics, paper, wood and glass. THz imaging employs safe low power non-ionizing electromagnetic pulses, with lateral resolution  $< 200$   $\mu\text{m}$ , and depth resolution  $< 50$   $\mu\text{m}$ . THz pulses can be analyzed spectroscopically to reveal chemical content. Recently, highly integrated turn-key THz imaging systems have been introduced commercially. We will demonstrate the detection of voids and disbonds intentionally incorporated within the sprayed on foam insulation of a space shuttle external tank mock-up segments. An industrially hardened THz scanning system which has been deployed to scan the space shuttle tank with small remote transceiver will be described. Additional terahertz security imaging applications for the detection of weapons and explosives will also be discussed, as well as the application of terahertz sensors for high speed industrial process monitoring and quality control.