

459.

Title: A Review of Optical NDT Technologies

Author: Zhu, YK ; Tian, GY ; Lu, RS ; Zhang, H

Source title: SENSORS

Volume: 11 Issue: 8

pages: 7773-7798

Publication year: AUG 2011

Abstract: Optical non-destructive testing (NDT) has gained more and more attention in recent years, mainly because of its non-destructive imaging characteristics with high precision and sensitivity. This paper provides a review of the main optical NDT technologies, including fibre optics, electronic speckle, infrared thermography, endoscopic and terahertz technology. Among them, fibre optics features easy integration and embedding, electronic speckle focuses on whole-field high precision detection, infrared thermography has unique advantages for tests of combined materials, endoscopic technology provides images of the internal surface of the object directly, and terahertz technology opens a new direction of internal NDT because of its excellent penetration capability to most of non-metallic materials. Typical engineering applications of these technologies are illustrated, with a brief introduction of the history and discussion of recent progress.