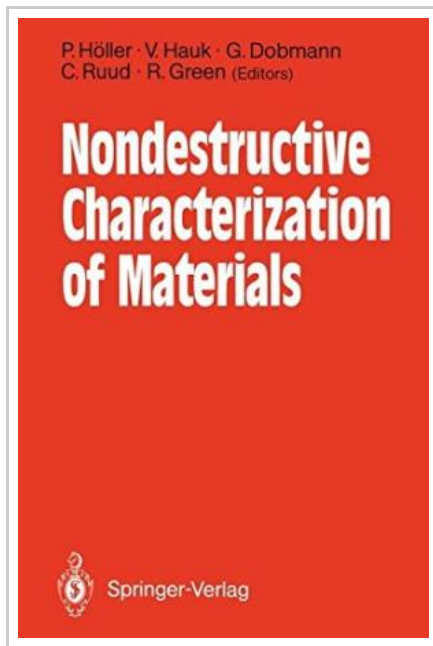




Nondestructive Characterization of Materials

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Condition: New. Publisher/Verlag: Springer, Berlin | Proceedings of the 3rd International Symposium Saarbrücken, FRG, October 3-6, 1988 | Organized by Deutsche Gesellschaft für zerstörungsfreie Prüfung e.V. (DGZfP), Berlin and Fraunhofer-Institut für zerstörungsfreie Prüfverfahren (IzfP), Saarbrücken | Engineering structures for reliable function and safety have to be designed such that operational mechanical loads are compensated for by stresses in the components bearable by the materials used. What is "bearable"? First of all it depends on the properties of the chosen materials as well as on several other parameters, e.g. temperature, corrosivity of the environment, elapsed or remaining serviceable life, unexpected deterioration of materials, whatever the source and nature of such deterioration may be: defects, loss of strength, embrittlement, wastage, etc. DEFECTS and PROPERTIES of materials currently determine loadability. Therefore in addition to nondestructive testing for defects there is also a need for nondestructive testing of properties. The third type of information to be supplied by nondestructive measurement pertains to STRESS STATES under OPERATIONAL LOADS, i.e. LOAD-INDUCED plus RESIDUAL STRESSES. Residual stresses normally cannot be calculated; they have to be measured nondestructively; well-approved elastomechanical finite element codes are available and used for calculating load-induced stresses; for redundancy and reliability, engineers, however, need...



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