# NONDESTRUCTIVE CHARACTERIZATION OF MATERIALS X 

Proceedings of the $10^{\text {th }}$ International Symposium on Nondestructive Characterization of Materials ${ }^{\text {TM }}$ 26-30 June 2000, Karuizawa, Japan

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## Nondestructive Characterization of Materials X

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# Nondestructive Characterization of Materials X 

# Proceedings of the $10^{\text {th }}$ International Symposium on Nondestructive Characterization of Materials ${ }^{\text {TM }}$ 26-30 June 2000, Karuizawa, Japan 

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## PREFACE

The papers published in these proceedings represent the latest developments in nondestructive characterization of materials and were presented at the Tenth International Symposium on Nondestructive Characterization of Materials held on June 26-30, 2000 in Karuizawa, Japan. The symposium was held concurrently with three other symposiums and one workshop in the Tenth Iketani Conference supported by Iketani Science and Technology Foundation, Japan. This symposium is the tenth in the series that began in 1983 in Hershey, Pennsylvania, USA and became an international meeting in 1986 with Montreal meeting.

The symposium started with a Plenary Lecture entitled "Application of Non-Contact Ultrasonics to Nondestructive Characterization of Materials" by Professor R. E. Green, Jr., The Johns Hopkins University. Various characterization methods were presented at the symposium, including ultrasonic, X-ray, eddy currents, laser, thermal wave, acoustic emission, optical fibers, optics, magnetics and ultrasonic microscope. The materials covered metals, polymers, ceramics, composites and semiconductors. Thin films and coatings as well as smart materials were also emphasized in this symposium.

The symposium organizers would like to thank the authors for their excellent presentations and manuscripts and the session chairpersons for keeping the session on time and stimulating lively discussions. The symposium and these proceedings would have not been possible without the enthusiasm and extremely hard work of Ms. M. Nakajima and Ms. A. Shirai, Secretaries, at the Research Center for Advanced Science and Technology (RCAST), the University of Tokyo, who answered correspondence and prepared material for all of the notices and publications.

Symposium Co-Chairpersons<br>Robert E. Green, Jr.<br>The Johns Hopkins University<br>Teruo Kishi<br>National Institute for Advanced Interdisciplinary Research, MITI, Japan<br>Tetsuya Saito<br>National Research Institute for Metals, STA, Japan<br>Nobuo Takeda<br>The University of Tokyo<br>B. Boro Djordjevic<br>The Johns Hopkins University

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TITLE: Nondestructive Methods for Material Property Determination
EDITORS: C. O. Ruud and R. E. Green, Jr.
PUBLISHER: Plenum Press, New York, USA (1984)

LOCATION: Montreal, Canada
TITLE: Nondestructive Characterization of Materials II
EDITORS: J. F. Bussiere, J.-P. Monchalin, C. O. Ruud and R. E. Green, Jr.
PUBLISHER: Plenum Press, New York, USA (1986)

LOCATION: Saarbrücken, Germany
TITLE: Nondestructive Characterization of Materials III
EDITORS: P. Holler, V. Hauk. G. Dobmann, C. O. Ruud and R. E. Green, Jr.
PUBLISHER: Springer-Verlag, Berlin, Germany (1989)

LOCATION: Annapolis, Maryland, USA
TITLE: Nondestructive Characterization of Materials $\mathbb{N}$
EDITORS: C. O. Ruud, J. F. Bussiere and R. E. Green, Jr.
PUBLISHER: Plenum Press, New York, USA (1991)

LOCATION: Karuizawa,Japan
TITLE: Nondestructive Characterization of Materials V
EDITORS: T. Kishi, T. Saito, C. O. Ruud and R. E. Green, Jr.
PUBLISHER: Iketani Science and Technology Foundation, Tokyo, Japan (1992)

LOCATION: Oafu, Hawaii, USA
TITLE: Nondestructive Characterization of Materials VI
EDITORS: R. E. Green, Jr., K. J. Kozaczek and C. O. Ruud
PUBLISHER: Plenum Press, New York, USA (1994)

LOCATION: Prague, Czech republic
TITLE: Nondestructive Characterization of Materials VII
EDITORS: A. L. Bartos, R. E. Green, Jr. and C. O. Ruud
PUBLISHER: Transtec Publications, Zürich-Uetikon, Switzerland (1996)

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TITLE: Nondestructive Characterization of Materials VIII
EDITORS: R. E. Green, J., H. I. McHenry and C. O. Ruud
PUBLISHER: Plenum Press, New York, USA (1998)

LOCATION: Sydney, Australia
TITLE: Nondestructive Characterization of Materials IX
EDITORS: R. E. Green, Jr.
PUBLISHER: American Institute of Physics, Melville, New York, USA (1999)

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