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NDE Publications: 1972 - 1977

Leonard Mordfin, editor

Office of Nondestructive Evaluation
National Measurement Laboratory
National Bureau of Standards
Washington, D.C. 20234

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U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

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U.S. DEPARTMENT OF COMMERCE, Juanita M. Kreps, *Secretary*
Dr. Sidney Harman, *Under Secretary*
Jordan J. Baruch, *Assistant Secretary for Science and Technology*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director*

Preface

Although the Nondestructive Evaluation (NDE) Program at NBS was not established as a formal entity until 1975, this compilation of publications for the period 1972-1977 is ample evidence that the Bureau has been involved in NDE work for many years. In fact, NBS can take credit for some significant early accomplishments in NDE.

The Bureau's work on the radiographic detection of flaws in aluminum and steel dates back to the closing years of World War I [1][1]. In the 1920s, Major William Hoke of the Army discovered the magnetic particle test method while working at NBS [2]. A decade later, NBS scientist Abner Brenner developed the Magnegage, a device for making rapid nondestructive measurements of metal coatings [3]. This instrument, which was an application of an earlier development by Raymond L. Sanford [4], found extensive use in World War II for measuring the thickness of chromium in the lands and grooves of large caliber guns, and is still in use today.

Present NBS work to establish electrical conductivity standards, for the accurate sorting and identification of alloys, traces back to a number of early NBS resistance standards, perhaps the first of which was developed by J. L. Thomas in 1930 [5]. Similarly, a new NBS effort to develop improved measurement methods and standards for residual stress has its roots in the spiral contractometer created by Brenner and Senderoff in 1949 [6], and in the first ultrasonic velocimeter, developed by Greenspan and Tschiegg in 1957 [7]. The entire field of ultrasonic NDE, in fact, received a tremendous boost when Jaffe, Roth and Marzullo invented the highly sensitive transducer material PZT in 1954 [8].

The rapid growth in NBS publications in NDE in recent years attests to the stimulating effect that the NDE Program has had on NBS contributions in this area. However, the nature of NDE is so inherently interdisciplinary that even today there is a considerable volume of valuable work on NDE that is performed at the Bureau under other programs. In this bibliography we have attempted to compile the NDE publications from all NBS programs in the hope that this consolidated reference source will be helpful to NDE researchers and users in government, industry and the academic community.

It is our present intention to supplement this listing annually. To this end we would welcome your comments and suggestions for improving the format. If we have inadvertently omitted something, or cited something incorrectly, let us know; we'll make amends in the first supplement.

Harold Berger, Chief
Office of Nondestructive Evaluation
National Measurement Laboratory

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NDE PUBLICATIONS: 1972-1977

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1. Introduction

This report presents a bibliography of NBS publications on nondestructive evaluation that appeared in the open literature in the years 1972 through 1977. Almost all of these publications were authored by members of the NBS staff and include papers published in non-NBS media as well as papers and reports from the NBS publications series. A few of the publications cited were written for NBS media by non-NBS authors.

These publications address a wide variety of NDE methods, both those that are widely used in industry and some that are relatively new. For completeness, publications dealing with technologies that directly support NDE, such as densitometry and piezoelectricity, have been included.

The 211 entries in the bibliography are listed in alphabetical order by the surname of the first author in Section 2 of this report. The last four entries, Nos. 208 through 211, are an exception; these were found too late to be included in the alphabetical sequence. With this exception, all of the entries attributed to each first author are listed chronologically. This enables the reader to follow each such author's work in a reasonably logical sequence.

Section 3 of this report is a subject index for the publications listed. This index is quite comprehensive and, when used together with the alphabetical bibliography, may be expected to enable readers to locate those publications of interest to them without much difficulty.

The last section of this report provides some assistance to readers wishing to obtain copies of specific publications listed.

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15. SUPPLEMENTARY NOTES

16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

This report is a bibliography of 211 National Bureau of Standards (NBS) publications on nondestructive evaluation (NDE) and related technologies for the years 1972 through 1977. A detailed subject index is included, as well as information on how copies of many of the publications may be obtained. A preface by Harold Berger, Chief of the NBS Office of Nondestructive Evaluation, cites several early and significant NBS contributions to NDE, some of them dating back fifty years or more.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)*
Acoustic emission; bibliography; eddy currents; index; National Bureau of Standards; nondestructive evaluation; publications; radiography; ultrasonics.

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