

PREFACE

This report contains the edited transcripts of the Review of Progress in Quantitative NDE held at Cornell University, June 14-17, 1977. The Review was sponsored by the Advanced Research Projects Agency and the Air Force Materials Laboratory as a part of and at the conclusion of the third year of work on the Interdisciplinary Program for Quantitative Flaw Definition, Contract No. F33615-74-C-5180. Arrangements for the Review were made by the Science Center, Rockwell International, host organization for the Interdisciplinary Program, and the Materials Science Center at Cornell University, Prof. H. H. Johnson, Director.

The format selected for this Review was somewhat different from those of the past. For the first time in this series, a number of poster sessions were presented in addition to the traditional technical sessions. The poster sessions provided a good way to accommodate the growing momentum in the NDE research field (as evidenced by an increased number of papers) while maintaining a forum for technical exchange. The posters presented at the Review are included in this report as well as the technical papers. As a further means of stimulating this exchange, several papers related to the main technical interests of the ARPA/AFML program were included in the Review and are presented even though they were not directly sponsored by ARPA/AFML.

In addition to the technical presentations, two overview papers of significance were presented. One of these was given by Mr. W. J. Willoughby, Jr., Deputy Chief of Naval Material, in the opening session. Mr. Willoughby provided a very timely and vivid description of current actions within Naval Material aimed at the promotion and improvement of overall reliability. The second of these was given in the closing session by Dr. F. N. Kelley, Director, Air Force Materials Laboratory. In his paper, Dr. Kelley described a format for the reduction to practice of new research results as well as pitfalls to avoid in the process. He also outlined several features which are necessary for the establishment of a steady flow of new technology, one of which is the injection of "real world" problem awareness to the researcher. This was also a very timely paper, for a number of research efforts have reached maturity under this and other ARPA and AFML programs and may now be considered for reduction to practice through appropriate "windows" of opportunities and needs. The final session of the Review was, in fact, devoted to a presentation of these results.

The organizers of the Review wish to acknowledge the financial support and encouragement provided by the Advanced Research Projects Agency and the Air Force Materials Laboratory. Special thanks are due to both Mr. Willoughby and Dr. Kelley for their summaries. Both of these gentlemen took time from very busy schedules to be present at the Review. The organizers also wish to thank the speakers, session chairmen, authors of poster presentations, panel members, and participants who collaborated to provide a stimulating meeting. They wish to acknowledge with thanks the assistance of Mrs. Diane Harris who managed the organizational matters of the meeting from the Science Center, and Ms. Shirley Dutton and Mrs. Lana Eriksson for the preparation of the Proceedings. They are indebted to Prof. H. H. Johnson, Director of the Materials Science Center at Cornell University, and his staff for their excellent cooperation in the conduct of the Review, to Ms. Kris Molt and her staff at Cornell University who ably assisted Mrs. Harris in the management of local arrangements, and to Prof. J. A. Krumhansl, who has been a participant in the ARPA/AFML program since its inception, for the initial invitation to hold the Review at Cornell.

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