Nondestructive evaluation (NDE) techniques offer time-efficient methods for determining properties as well as characterizing defects in materials and structures. Application of these NDE techniques requires knowledge of the principles supporting the technique as well as engineering knowledge of the problem being addressed. The present volume contains papers describing various techniques for evaluating residual stress as well as flaw characterization in piping, tubing, and other shapes. Additionally, the use of neural networks in NDE is included. Also reported in this volume is an overview of the progress of moving ultrasonic flaw characterization through the ASME Code and Standard acceptance process. This is an invited paper by Hedden et al. Finally, several papers discuss the use of guided waves, starting with an extensive review by Dr. Rose.

Most of the papers originate from the 2001 PVP Conference in Atlanta and the 2001 NDE Topical Conference in San Antonio. Dr. Corinne Darvennes of Tennessee Technological University organized the 2001 NDE Topical Conference that supplied several of the papers in this volume. Her dedicated work in selecting and re-editing the papers for publication is greatly appreciated. The idea of this special issue on nondestructive evaluation originated with Dr. Sam Zamrik, JPVT Editor. The editorial guidance of Dr. Zamrik and the knowledgeable support of Diane Bierly, Dr. Zamrik’s Assistant, have been crucial in putting together this complete issue. Finally, the hard work of the authors as well as the reviewers is particularly appreciated.

Readers of this volume will hopefully be convinced that NDE has broad capability, based on sound science and good engineering application. The opportunities for confident flaw characterization and stress field evaluation are immense.

Guest Editors:

Don E. Bray
Organizer, Sessions on Residual Stress Measurement
2001 PVP, Atlanta

Corinne Darvennes
Chair, 2001NDE Topical Conference, San Antonio