

**OPTICAL TRANSDUCERS AND TECHNIQUES
IN ENGINEERING MEASUREMENT**

OPTICAL TRANSDUCERS AND TECHNIQUES IN ENGINEERING MEASUREMENT

Edited by

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PREFACE

Optical measurement techniques have been stimulated in recent years by the advent of lasers and also by modern electro-optical devices. Despite the considerable research and developments in this field, these techniques are not widely appreciated by engineers, who are often unaware of their versatility. This book provides a single comprehensive source giving the basic science and technology involved in the implementation of these latest methods, for use by industrial and research engineers, in the solution of measurement problems and the design of measurement systems. The book covers the most recent and useful innovations and emphasises applications to practical problems.

The emphasis in each chapter has been placed on the transducer aspect, i.e. on the instrumentation necessary to perform specific tasks, so that all the necessary components—basic theory, practical details and devices, application to actual problems—are included, as well as information concerning probable sensitivity, accuracy, etc. Simple explanations of complex physical phenomena have been used instead of rigorous treatments, the latter usually being available from the references associated with each chapter.

Engineers and applied scientists are often faced with the measurement of a wide range of parameters, e.g. dimension, displacement, strain, force, pressure, torque, fluid flow, fluid level, time dependent effects, etc., and optical methods may seem inappropriate at first glance, but all those mentioned are capable of evaluation using optics and most physical parameters are susceptible to this type of measurement.

The main advantages of these methods can be summarised as follows: no physical contact; large field coverage; very high sensitivity; applications in hostile environments. It is often one or more of these reasons which justify the use of optics.

Finally, I express my sincere thanks to all the authors who have contributed to this book.

A. R. LUXMOORE

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