



Unrivalled in its coverage and unique in its hands-on approach, this guide to the design and construction of scientific apparatus is essential reading for all scientists and students in the physical, chemical, and biological sciences, and engineering.

This Fourth Edition contains:

- Over 400 figures and tables to permit specification of the components of apparatus, many new to this edition
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- New sections on detectors, low-temperature measurements, and high-pressure apparatus

Building Scientific Apparatus covers the physical principles governing the operation of the mechanical, optical, and electronic parts of an instrument. The skills required in the design process, such as mechanical drawing, circuit analysis, and optical ray-tracing and matrix methods, are explained in detail, and dedicated chapters deal with temperature measurement, vacuum technology, detectors, and electron optics. The criteria for component selection are provided, and the parameters used by manufacturers to specify their products are included as tables and figures. Mechanical, optical, and electronic construction techniques carried out in the laboratory, as well as those let out to specialized shops, are also described. Step-by-step instruction, supported by many detailed figures, is given for laboratory skills such as soldering electrical components, glassblowing, brazing, and polishing.

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"... concentrating several careers' worth of equipment-building experience into a single volume ... this book is destined to save years of collective frustration for students and scientists. It is a "must-have" on the shelf of every research lab."
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"This book is a unique resource for the beginning experimenter, and remains valuable throughout a scientist's career. Professional engineers I know also own and enjoy using the book."
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