X-ray Structure Determination—A Practical Guide; by G.H. Stout and L.H. Jensen, Wiley-Interscience, Chichester, 1989, xv + 453 pages, £35.50. ISBN 0-471-60711-8.

This well-known book, first published in 1968, returns in its second edition after a few years out of print. The emphasis is that, while procedures involved in determining a crystal structure have become largely automated and computer packages have enabled many chemists to do their own structure determination, it is necessary to understand what one is doing in order to have confidence in the results.

Changes from the first edition reflect the advances in the technique. Synchrotron radiation has been added to the description of X-ray sources. The chapter on data collection describes the use of four circle diffractometers whilst warning against unquestioningly accepting the unit cell and crystal symmetry suggested by the machine without checking by film methods. Area detectors are mentioned. The section on direct methods has been substantially rewritten, and describes the use of automated computer packages such as MULTAN. Rigid body and restrained least squares refinements are considered. An additional chapter has been added entitled "Ambiguities and Uncertainties", which discusses the question of how far the results are to be believed.

This book now once again provides an excellent step-by-step guide to do-it-yourself X-ray structure determination for chemists.

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