Growth and Characterization of Semiconductors. By R.A. Stradling and P. C. Klipstein (Eds.) Adam Hilger, Bristol, Philadelphia and New York 1991, 239 pages, 150 figures and 4 tables. (ISBN 0-85274-131-6) Paperback £ 19.50.

This book presents on 240 pages and in eleven chapters, each written by an expert in the field, a selection of epitaxial growth and defect characterization methods of semiconductor science and technology. It collects the papers presented at a short course held at the Imperial College in London.

Three chapters are devoted to epitaxial growth, one to the basics of epitaxy, the other two to Molecular Beam Epitaxy (MBE) and Metal Organic Chemical Vapor Deposition (MOCVD), the remaining eight chapters deal with characterization methods, with electron microscopy (scanning and high resolution, SEM and HREM), optical methods (photoluminescence and localized vibrational spectroscop mode, PL and LVM), electron paramagnetic resonance (EPR), capacitance spectroscopy (DLTS) and electrical methods (Hall effect, conductivity).

It is evident that a book of this size can neither treat all relevant methods nor cover those methods, that are treated, in great detail. For example the reader will not find X-ray and nuclear physics methods in solid state or Raman spectroscopy in this book. He also will not find detailed mathematical treatments of the working principles or analytic tools of the methods treated. What he will find is a series of interesting stories of how to grow artificial semiconductors and how to disclose identity and characteristic parameters of defects in semiconductors.

Being forced to renounce a systematic treatment the authors have developed a concept how to bring the reader to a more intuitive understanding. They illustrate the physical principles, on which the experimental method under consideration is based, give an outline of the experimental set-up and desribe some examples of application, which exemplify the potentialities of the method, but also show up its limitations.

What does the student or scientist get by reading this book? Younger students, whose understanding of a physical phenomenon relies on appropriate theoretical treatment, will get a first feeling, how the method works, and might use the contents of the chapter as a guideline for more extensive studies of the literature cited. Students or scientist who are active in semiconductor research and are already familiar with one or the other growth or characterization method can presumably profit most from this book. They certainly will enjoy carefully selected and well illustrated examples of application, which in many cases contain an interesting description of the physical problem and of the way, which through the data analysis leads to an interpretation of the measured parameters. And they may also profit from many remarks concerning experimental and technical details, which often sum up a considerable amount of trial-and-error experience and whose consideration in own experimental work may save a lot of time and frustration.

In summary, this book presents a very interesting access to modern growth and characterization methods of semiconductors, which in my opinion will prove very successful.

W. Schröter, Göttingen