flood of papers; the work under review here cites more than 500 references, almost all of them since 1985. Several factors account for the torrent: Fractals and scaling are now a day-to-day tool for many scientists, and we know a good deal about when to use it (and when not to). Additionally, direct imaging techniques (scanning tunneling microscopy and the like) now give insights to the growth and structure of surfaces that were simply unimaginable a few decades ago, and they provide a mass of data for workers interested in structure and growth.

László Barabási and Gene Stanley give a very nice overview of this large, recent literature and try to make it accessible to those outside of the specialist community that created it. Several audiences should find the book useful: For the specialist and would-be specialist, the authors gather lots of scattered ideas and present them in a relatively unified way. My students and I have already formed the habit of looking things up in this book, particularly in the appendices ("numerical recipes" is the title of one of them). For a graduate student starting in the area, this book is a fine introduction. And for the nonspecialist, the authors try to demystify the rather forbidding theoretical apparatus of exponents, self-affinity and dynamical renormalization. This is especially important because materials scientists and crystal growers, who have been traditionally interested in surfaces, sometimes view this literature with attitudes ranging from bemusement to outright hostility. For those who want to find out what statistical physicists are doing with surfaces and interfaces (and what all this fuss over exponents is about anyway), this is a good place to start.

I am a bit skeptical about the announced purpose of the book as a textbook. Maybe for a few special-topics courses there would be an audience, and in the context of a course about physics far from equilibrium this would be an interesting reference. It does not try to be a general introduction to surface science, but it could be useful as a reference in a course on the subject. Still, I suspect that most readers will use the book for self-directed study.

In a book of this scope, it is normal that there will be some problems, particularly where Barabási and Stanley try to cover too much. For example, the chapter on equilibrium roughening is too abbreviated, the beautiful recursion relations of Michael Kosterlitz and David Thouless appear mysteriously without explanation. The brief discussion of self-organized criticality will find many critics. In general, the emphasis is on theory (both the authors are theorists), and for careful discussion of experiments readers will have to look elsewhere. Nevertheless, Barabási and Stanley have done a real service in writing a clear and careful introduction to this active area. At this level, the book is unique and merits a place on many shelves.

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Interaction of Electromagnetic Waves with Electron Beams and Plasmas

C. S. Liu and V. K. Tripathi
World Scientific, River Edge, N.J. 1994. 167 pp. $54.00 hc ISBN 981-02-1577-0

Chuan S. Liu and Vipin K. Tripathi's *Interaction of Electromagnetic Waves with Electron Beams and Plasmas* provides broad coverage of the physics of interaction between electromagnetic radiation and plasmas. The subjects treated span several areas of considerable interest: laser fusion, laser beat-wave acceleration and generation of coherent radiation by free electrons. The authors' approach is mainly analytical, with occasional mention of significant experiments that have a direct bearing on the subjects treated.

Liu and Tripathi review a few fundamental concepts in the first two chapters. They then go immediately into the mathematical treatment of mode conversion as a result of spatial nonuniformity in the plasma density. This lays the groundwork for the last chapter, in which they analyze the fate of an intense laser light incident on a nonuniform plasma, a topic of obvious importance to laser fusion and many other subjects. The intervening chapters include treatments of self-focusing and filamentation, systematic studies of parametric excitation and soliton solutions and their stability. Two chapters are devoted to the electron beam: one on its acceleration by a plasma wave generated by the beating of two lasers and one on its use as a source for high-power coherent radiation. Only nonmagnetized plasma is treated.

The reader is assumed to have a sound preparation in plasma physics. This should include a complete mastery of the physics described by the plasma dispersion function in different regimes as well as familiarity with such concepts as convective and absolute instability, negative energy waves and group propagation. Terms like ponderomotive force, quarter-critical density and wave breaking are used but not explained, and the terms asymptotic expansions, integral representations and special functions are also freely used in the text.

A unique feature of Liu and Tripathi's book is that it gives the mathematical basis of many concepts that are taken for granted in other reviews. Such mathematical treatments are often omitted in, for example, William Kruer's well-known text, *The Physics of Laser Plasma Interaction* (Addison-Wesley, 1987). The new monograph thus fills an important gap. Further, its derivations are reasonably detailed, and key results are displayed for ready use.

The authors have made important contributions to parametric processes in plasmas and their account is authoritative, if not exhaustive. The lucid and sometimes beautiful physical explanations are a pleasure to read. The succinct summaries given at the beginning of each chapter are useful. The references are few but perhaps adequate.

Among the shortcomings are numerous typographical errors and the absence of an index. References to earlier chapters are infrequent and at times misplaced, and the important figure with data on Raman backscattering, mentioned on page 146, is missing.

On the whole, this book is highly recommended to those who wish to launch a serious study of laser–plasma interaction. It should also be useful for a special-topics course at the advanced graduate level.

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Electric and Magnetic Interactions

Ruth Chabay and Bruce Sherwood
Wiley, New York, 1995. 660 pp. $22.00 pb ISBN 0-471-07847-6

Electric and Magnetic Interactions by Ruth Chabay and Bruce Sherwood is intended as a text for a calculus-based introductory course on electricity and magnetism. It covers the usual topics, such as Coulomb's and Gauss's laws, electric potentials and fields, magnetic fields and induction, Maxwell's equations, electromagnetic radiation and so on. But the book takes a decidedly nonstandard approach to the subject.

At the heart of this approach are a number of "desktop" experiments