bonding properties, of the problems of interpreting hindered internal rotation, and of the analysis of absorption band shapes through correlation functions. The presentation of these topics, which occupy about the last third of the book, emphasizes that, after all, the goal of spectroscopy, like other branches of science, is to discover something about the structure and behavior of matter. It gives a beginning student a good idea of what research in vibrational spectroscopy is really all about.

The beginning chapters are devoted to a development of the basic, nuts-and-bolts theory of vibrational spectroscopy. These contain such necessary topics as the theory of small vibrations, normal coordinates, matrix algebra, symmetry and point-group representation theory, sum and product rules, and so forth.

In many important areas, the discussions are quite brief and in my opinion, fall short of giving an uninitiated reader enough to work out simple examples for himself. These weaknesses could have been removed by giving a little more detailed discussion of a few fundamental points. For example, the admittedly complicated topic of separating the internal and external degrees of freedom in a molecular system, is glossed over when it first appears in an early chapter. This creates a problem that haunts the latter parts of the book. When associated problems are encountered, such as in describing the use of vectors to compute the kinetic energy matrix, or in explaining where the various terms in the Teller–Redlich product rule come from, a little more discussion of the basic problem of separating the degrees of freedom is given. This could have been handled in a more efficient and connected manner by an adequate discussion in the beginning.

In another example, Rayleigh's inequality rule is misstated as "... increasing any mass in a periodically vibrating system without changing the force field *must* [emphasis added] decrease all frequencies." As might have been anticipated, this statement is shortly followed by many contradictory examples. Steele's momentary logical lapse would not have been too serious had he given just a little more detail on the origin of Rayleigh's rule (only a few words and one equation would have sufficed) so that a beginner could have discovered what he should have written, and thereby derived some satisfaction from outsmarting the author.

In spite of these flaws, this book would be a good text for a lecture course, or for an independent student who is willing to look at one of the older books on vibrational spectroscopy for more explanatory detail.

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new books

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