Chemical graph theory is an interdisciplinary field where mathematical chemistry and graph theory meet. In this interdisciplinary science, those graph invariants which found some chemical application(s) are usually referred as topological indices or chemical indices. This book is mainly concerned with the mathematical aspects of various well-known chemical indices.

The book is organized in five chapters. At the end of each chapter, a list of exercises is given. The first chapter is devoted to the (chemical) graph theoretical notation and terminology, as well as some definitions and results, to be used in the later chapters. The inverse problem for the Wiener index (which is usually considered as the very first chemical index in the history of chemical graph theory) and some particular extremal problems, as well as some general distance-based chemical indices are discussed in the second chapter. The third chapter is concerned with the results about several vertex-degree-based chemical indices as well as some edge-degree-based chemical indices. Counting-based and spectral-based chemical indices are considered in the fourth and fifth chapters, respectively. At the end of fifth chapter, a list of 132 references is included, which is followed by a subject index.

The book consists of 245 pages (plus a subject index and a 9 pages bibliography). Overall this is a nice and well-written book that provides a concise introduction to several main topics of chemical graph theory. In this reviewer’s opinion, one of the most interesting features of this book is that it covers some of the most commonly used techniques for solving problems in the mathematical theory of the chemical indices. The book can be considered as a general reference on the mathematical theory of chemical indices and it should be a valuable item in the personal library of those young researchers who have special interest in chemical graph theory.

Reviewer: Akbar Ali (Sialkot)