

BOOK REVIEW

Base-Catalyzed Reactions of Hydrocarbons and Related Compounds. By H. PINES AND W. M. STALICK. Academic Press, New York, 1977. 587 pp.

This review of base-catalyzed reactions is truly an impressive array of chemistry. The authors have summarized a broad area of carbanion chemistry and assembled in one place a veritable storehouse of information. Undoubtedly, this will become (and continue for some years to be) a first source for information and references. The coverage is broad; the authors state in their preface that the intent was "not to review every piece of literature pertinent to base-catalyzed reactions of hydrocarbons but to cover primarily those references considered fundamental to these topics." In this, I believe they have succeeded. We might note that the scope does go somewhat beyond reactions of hydrocarbons, to include analogous reactions of a wide variety of hetero-substituted alkenes, aromatics, and pyridines.

The book starts with an introductory chapter which (following a brief historical survey) discusses acidity and acidity scales for weak acids. This discussion is helpful and stresses the difference between thermodynamic and kinetic acidity. Its usefulness suffers somewhat from a lack of depth, and failure to normalize tables of pK_a values to a common starting point. A summary of the common base catalysts follows. Subsequent chapters are devoted to various classes of reactions and compounds; i.e., (2) Isomerization of Olefins; (3) Isomerization of Acetylenes and Allenes; (4) Dimerization and Oligomerization; (5) Reactions of Aromatic Hydrocarbons with Olefins; (6) Reactions of Alkylpyridines and Alkenylpyridines; (7) Homogeneous Carbon-Carbon Addition Reactions; (8) Reactions of Aprotic Solvents with Olefins; (9) Carbon-Carbon Addition of Olefins with Miscellaneous Compounds; (10) Addition of Ammonia,

Amines, and Anilines to Olefinic Hydrocarbons; (11) Hydrogenation; (12) Dehydrogenation, Aromatization, and Hydrogen Transfer; (13) Oxidation; and (14) Dehydration of Alcohols. Organization within the chapters is by further subdivisions of compound types, reactions, and catalysts. The authors have been wise in including considerable detail on the conditions used for catalytic processes.

Although I am delighted to see gathered in one place the wealth of chemistry covered in this book, I am at the same time somewhat disappointed in the depth of the presentation. Sizeable parts of the book seem in a sense to consist of a series of abstracts of papers. Each chapter does have a brief introduction which outlines the material to be covered, but broad generalizations and comparisons are rather rare. The book summarizes, with voluminous details, the important published literature but does not really represent an intellectual synthesis. Older papers are frequently presented as discussed by the original authors, without application of newer ideas. On occasion, the discussion of a more sophisticated topic leaves something to be desired. Resonance notation and questions of kinetic vs thermodynamic control are not always clearly delineated. The organization of the book (as noted above) probably lends itself to systematic cataloguing of results, without thorough general discussion.

In summary, the book will be a valuable one. It is an exposition of a large portion of organic and catalytic chemistry, from authorship which has generated many important contributions to the area. It is strong on factual details and leading references and will be a useful addition to the library of workers in this and related areas.

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