

among farmers. The chapter is replete with empirical estimates of value of irrigation water under various agro-climatic and cropping conditions, yielding useful policy insights.

Chapter 12 is for advanced readers with background in dynamical mathematical modeling. With this approach Chandrakanth demonstrates that failure to consider the user costs of current water extraction will lead to sub-optimal exploitation of the resource. He further argues that this myopic approach not only leads to economic inefficiency, but also to intergenerational inequity. Like in the previous chapters, he develops empirical application of the theoretical model for underground aquifers that are recharged by tanks and canals. Comparing the time paths of water table, harvests and net revenues between extraction decisions with and without user costs should sharpen the readers' understanding of the inefficiency arising from myopic water use decisions.

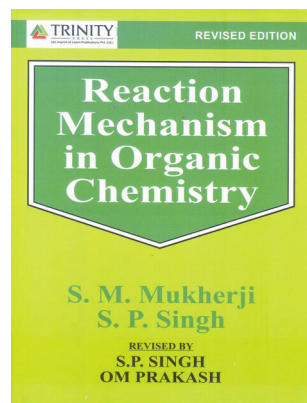
Chapter 13 gives a good account of various regulatory- and incentive-based policy options for increasing water use efficiency and minimizing reciprocal externality. The author identifies existing institutional and policy failures that continue to pose threat to sustainable water use and food security in irrigated agricultural belts of India. Among other policy failures, the author is particularly concerned about the poorly informed electricity subsidy policy, which serves as a perverse incentive and promotes over-exploitation. A more sustainable policy would entail equitable and selective subsidy rather than universal entitlement given to farmers irrespective of their income and wealth categories. The water use decisions must be made on *right* value of water that takes into account more objective water budgeting and external costs. The success of such policy implementation requires proper education of farmers on various aspects of water that transcend the boundary of their farms and the immediate future.

The readers should not mistake the book for one that is applicable to a small geographic region of the world. The hydrological concepts, empirical analyses and policy discussions found in this book could very well be applied to agricultural water use decisions and policies in other parts of India and even other

parts of the world with suitable adjustments.

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Reaction Mechanism in Organic Chemistry, Revised Edition. S. M. Mukherji and S. P. Singh (revised by S. P. Singh and Om Prakash). TRINITY Press, An Imprint of Laxmi Publications Pvt Ltd, 113, Golden House, Daryaganj, New Delhi 110 002. 2015. xiv + 705 pages. Price: Rs 595.

Anyone who has been involved with teaching science to undergraduate students in India, especially those in the rural areas, would be familiar with the students' greater liking and familiarity with text books that are written by Indian authors. The book *Reaction Mechanism in Organic Chemistry* has, for over four decades (since 1976), been one of the most popular books for aspiring undergraduate organic chemistry students of India. The revised edition (2015) of the book is an essential and apt update of the principles in this field. At its core, understanding organic chemistry is about understanding the mechanisms of organic reactions – thoroughness of which is both necessary and sufficient for creative exploration. This book attempts to serve this purpose through systematic (i) definition of principles, (ii) crisp discussions, and (iii) problem sets; on 14 chapters – including chemical bonding, stereochemistry, reaction intermediates,

different reaction mechanisms, reactions of carbonyls and aromatic rings, molecular rearrangements, photochemistry and pericyclic reactions. The chapter on stereochemistry is new in this edition and attempts to correlate well, the spatial relationship among reacting atoms with the rates of those reactions. Succinct updates on the stability and reactivity of carbocations – including neighbouring group participation, nonclassical cations – have been made. The new presentation on Curtin–Hammett principles and the Hammett and Taft equations is clear with concise mathematical explanations – to the benefit of even an average organic chemistry undergraduate. The new discussions on photochemical oxidative coupling, isomerization and substitutions of aromatic compounds, are simple and informative. Apart from these additional discussions – including on hydrogenation reactions, cheletropic reactions – explanations are brief with self-explanatory reactions. The book is admirably indexed and contains clear images, covering most of the topics relevant to undergraduate level organic chemistry. Apt reaction schemes, energy profile diagrams and figures with precisely informative labels, supplement the discussions in all chapters. Additional reading materials are aptly suggested in each chapter. Barring the spelling errors in a few places and the significant brevity in discussion of certain principles, the new edition maintains the *Dictionary* nature of the first edition and serves as an appropriate update. The simple English and brief presentations of the principles in reaction mechanisms in organic chemistry, will continue to suit those preparing for competitive national examinations such as GATE, CSIR–UGC–NET, as it has done over the last 4 decades. Overall, this book accomplishes the challenging task of describing most fundamental aspects regarding reaction mechanisms in organic chemistry in a single book and is an excellent guide for an undergraduate student in this field.

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