

PREFACE

Photocatalysis is an evolving subject on day-to-day basis and this subject has already started as part of our learning curriculum. This branch of science started to grow from the report by the Japanese team announcing the photoelectrochemical decomposition of water on TiO_2 surfaces in the early part of 70s. In this past 50 years this subject has seen many developments, new results, concepts, and applications are evolving on daily basis. This is a field that has revolutionized our approach to energy conversion process and pollution abatement processes have seen new solutions and remedies.

In this past half century, this subject has been responsible for the development of Photo-electrochemistry, the remarkable developments in harnessing solar radiation, the so-called solar cells, and has given rise to many daily use materials like self-cleaning tiles, hydrophobic wind screens and many more. Though the initial enthusiasm to produce fuel (hydrogen) by the photoelectrochemical decomposition of water has not seen great success, this has not hampered the hope and so there are still attempts to make this process viable commercially.

The learning process of this subject has some requisites, namely the subject requires knowledge of solid-state physics, material science, chemical engineering, analytical and synthetic chemistry, and many other disciplines. This situation imposes great barriers, and the learners find it difficult. In addition, non-availability of suitable and concise textbooks is yet another issue in this connection.

The present exercise is an attempt in this direction and the text has been evolved liberally borrowing from the literature available and as stated, this is still an evolving subject and hence the coverage as on-date cannot be completely satisfactory. This text has been evolved as a teaching resource and can have many short comings. The learning community will do a great service if these shortcomings can be brought to attention, so that the text can be improved further. The author is grateful to many members of the scientific community for contributing to the growth of this division of science.

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