

PREFACE

“The test of all knowledge is experiment. Experiment is the sole judge of scientific “truth””—R. P. Feynman.

Practical work has had a central and distinct role in chemistry. Experimentation is the essence of learning science. The purpose of doing experiments is to teach the principles of scientific inquiry, to improve understanding of theory through practical experience, to teach specific practical skills, such as measurement and observation, that may be useful in future studies, and to teach generic skills, such as teamwork and problem-solving, to motivate and engage students. It is important to have a clear idea of why we do practice science. It will be helpful to choose which experiments to do and how to integrate them with ‘theory’. Physical Chemistry Practical Guide aims to facilitate experimental exercise in the physical chemistry laboratory at the PG level of a student's career. The book will be very helpful for teachers in providing practical knowledge of important aspects of Physical Chemistry experiments. The book covers a wide range of areas from basic to advanced experiments, including calibration of instruments as well as highly accurate software for computational quantum chemical calculations. This book has been divided into four sections: Part I consists of general introduction, calibration of glassware, instruments, and precautions; Part II entails those experiments that have a simple theoretical background and classical methods; Part III comprises of experiments that are associated with more advanced theory, and technique that requires a greater degree of experimental skill and use of instruments. Part IV comprises experiments related to the use of computers and that are investigative in nature. Covering all aspects of classical, advanced, and computational chemistry experiments, this book will be useful for under graduate and post-graduate students to gain confidence in their ability to perform a physical chemistry experiment and to appreciate the value of the experimental approach.

We also celebrate this opportunity for expressing bottom-hearted gratitude towards the people who supported us at all stages of our work. The authors acknowledge their parents, spouse, family members, friends, and colleagues for their continuous support and encouragement above all our students. The basis of the book is to overcome difficulties that arise while performing physical chemistry practicals, and this we learned from our experience during our studenthood as well as interacting with the students during practical classes. We would like to acknowledge Mr. Sanju Soni, Ph.D. student of Department of Chemistry, Guru Ghasidas University, Bilaspur, for his dedicated efforts in preparing figures/improving the quality of figures in the book chapters without which this book would not have become a

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CONSENT FOR PUBLICATION

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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