

Exam Survival Guide: Physical Chemistry

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For Birgit

Preface

Novel concepts in teaching stress the active role of the student in the acquisition of competence. In this spirit, the *Exam Survival Guide: Physical Chemistry* was developed as a supplemental offer primarily to students, but also to teachers. The book presents more than 80 selected problems, some typical of physical chemistry examinations; others, owing to their relative complexity, suitable for seminars with the intention of reaching an in-depth understanding of the key topics in physical chemistry. The solutions to the problems are presented in a more extensive way compared with typical textbooks. Having worked out a solution independently, the student is invited to follow the solution offered in the text. Alternatively, the student can benefit from an solution, gain insight into solution strategies, methods of calculus, and additional information that draws attention to some remarkable points. The intention of the book is to encourage the reader to use paper, pencil, and computer to *cultivate* problem-solving in physical chemistry.

Each chapter deals with a key topic and starts with a short survey of the theory necessary to solve the problems. These basic concepts are not intended to replace the contents of tried-and-tested textbooks. Instead, they serve as starting points around which the topics of the exercises are developed. In addition, the book provides an extensive appendix of the essential mathematics typical of physical chemistry problems.

A first brief look through the chapters shows that the emphasis of this workbook is on the application of mathematical methods in physicochemical contexts. In fact, there are hardly any questions that can simply be answered by “yes” or “no.” The Chapter 1 deals with the aspects of this kind of quantitative problem-solving and provides a survey on the various topics, the level of difficulty, and hints on the manifold cross-links among certain problems.

Although I am aware of the varying curricula and examination formats, the different approaches that students develop during their career, the lively diversity among students - hard workers, sophisticated thinkers, pragmatists, optimists, and all the combinations in between - I hope this workbook is useful.

It is obvious that a book of this volume does not cover the entire field of physical chemistry. To maintain a clear and compact form, I have omitted topics

that some readers perhaps feel are lacking. If you have any comments, questions, or suggestions, or if you want to report errors, you are welcome to contact me under jochen.vogt@ovgu.de.

Magdeburg, Germany
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Jochen Vogt

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