

Preface

This book presents fundamental physical and physicochemical knowledge involved in oil and gas development engineering, such as physical and chemical phenomena, physical process. It is arranged to provide the knowledge of porous rock properties of reservoir rocks, and properties of fluids, i.e., gases, hydrocarbon liquids, and aqueous solutions, and the mechanism of multiphase fluid flow in porous media. The book also brings together the application of the above theories and knowledge.

This textbook is written to serve the undergraduate teaching of the petroleum engineering major. It focuses on the introduction of basic conceptions, terms, definitions, and theories, placing more emphasis on the width of knowledge rather than the depth. What should be learned through the course includes the definitions of some essential physical parameters, the physical process, important physical phenomena, influencing factors, and engineering applications. In addition, the measuring methods and experimental procedures for the key parameters are also included.

Through the study of this book, good foundation of knowledge frame for petroleum engineering should be established for students, which is benefit for both their further studying and their work in the future when they are engaged in job.

The book is originally arranged to match a 48-class-hour course, but flexibility is permitted during teaching and studying process.

The editing work of this book began from year 2002. In 2004, It is translated to English from the textbook *PetroPhysics* (Yang 2004, in Chinese) published by the Petroleum Industry Press, Beijing, China, and was used in teaching in China University of Petroleum, Beijing. It is Mr. Dong Hua, Lü Wenfeng, Li Baoquan, Yang Sisong, Guo Xiudong, Sheng Zhichao, Sun Xiaojuan, Sun Rong, Hang Dazhen, and Wu Ming, who made contribution during the translation and compiling.

In 2008, Ms. Ma Kai helped to recheck and recompile the textbook again. In 2010, Ms. Li Min and Mr. Cao Jie helped and made some corrections.

I would like to express my sincere thanks and appreciations to all people who have helped in the preparation of this book and given any helps in anyways.

Due to limitations of my knowledge and ability, this book may contain mistakes, wrong sentences, and so on. Therefore, it is welcomed for the interested readers to make a correction and let me known, if any mistake is found.

Beijing, China

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