

# 中国沉积学

冯增昭 王英华 刘焕杰 沙庆安 王德发

等著



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石油工业出版社

(京) 新登字 082 号

### 内 容 提 要

本书是集石油、地质、煤炭、冶金、核工业、高校和中科院系统的 25 个单位的 74 位在沉积学各个研究领域中卓有造诣的专家学者，以中国的实际材料为基础，以最新的沉积学理论为指导，撰写出的反映我国当今沉积学各个方面的研究状况、水平和特色的专著。全书包括沉积岩石学（13 章），沉积环境（13 章）和沉积矿产（9 章）三篇，共 35 章。本书图文并茂，是一个由各具特色的各章组成的相互联系的整体。

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可供从事或有志于沉积学、地质学与地球科学的研究人员、教学人员和学生们参考。

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石油工业出版社出版  
(北京安定门外安华里二区一号楼)  
北京书海文字处理中心排版  
石油工业出版社印刷厂印刷  
新华书店北京发行所发行

\*

787×1092 毫米 16 开本 59 $\frac{1}{4}$  印张 37 插页 1434 千字 印 1—3 000

1994 年 10 月北京第 1 版 1994 年 10 月北京第 1 次印刷

ISBN 7-5021-0850-5 / TE·795

平装定价：68.00 元

精装定价：98.00 元

# SEDIMENTOLOGY OF CHINA

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Sha Qing' an      Wang Defa

Petroleum Industry Press

沉积学在中国  
大地上开了花  
结果

葉連俊

一九九一年十二月



## 序

近十几年来，我国沉积学研究有很大的进展，成果累累。联合我国沉积学界各个研究领域的专家们，在统一的原则和规范下，各扬其长，分工合作，撰写一本反映和代表我国当今沉积学研究状况、水平和特色的专著，展示成果，总结经验，指点方向，服务四化，同时也为国际沉积学的发展作出我们应作的贡献；这将是一项有重要意义的事。

早在1986年，我就和王英华教授、刘焕杰教授、沙庆安教授等议及此事，他们均十分赞同。然而，由于种种原因，未立刻躬行。

1988年2月，我向国内沉积学界各个研究领域的专家们发出“关于撰写《中国沉积学》的初步设想”的倡议信，对本书的性质、内容、撰写原则以及出版费用的筹划等，提出了一个初步的建议，抛砖引玉，希望得到广大同行专家们的共鸣、支持和指教。很快，就收到了大家的回信，无不热诚支持，并提出了许多建设性的意见，有的还把他愿意负责撰写的章节的提纲寄来了。我深为大家的积极和热诚所感动。

在大家的支持下，1988年12月，成立了本书的编委会，统一研究、规划和落实本书的组织、编写、审校、出版费用筹划以及出版等事宜。

从1988年2月到现在，编委会和全体作者做了大量工作，共开过两次作者座谈会和五次编委会，许多次的主编和副主编的工作会议以及个别交换意见，主编和各位作者之间的近300封的来往信件和许多次的当面讨论，主编和副主编向沉积学界的多位老前辈们请教、与多个出版社联系、向中国石油天然气总公司和石油大学有关领导请示，各章稿件多次地和反复地审校和修正，以及出版费用的筹划等。现在，各个重大问题均已解决，全部稿件均已定稿，将由石油工业出版社出版。

全书共有3篇35章，约150万字，图件483幅，照片图版72版，由石油、地质、煤炭、冶金、核工业、高校和中国科学院系统的25个单位的74位作者撰写而成。历时4年之久。这确是一个巨大的工程，也是我国沉积学界的一件盛事。

本书有三个特点：

第一，本书各章的原始资料、图件、照片图版、实例、观点、方法论和学说等，基本上都是中国的，基本上都是中国土生土长的，都具有浓厚的中国气息，即土气。当然，该引用的外国材料和观点仍然要引用，否则，就是锁关自守了。但是，必须是以我们自己的为主，即以中国的为主，否则，就不是中国沉积学了。我们愈意跃身于国际沉积学界和地质学界并对国际沉积学和地质学的发展有所贡献，我们就愈要狠抓自己的创作。其辩证关系就是这样。本书就是一个创作。

第二，本书是一部专著。本书的每一章都是以中国的实际材料为基础，以作者自己的观点把这些材料贯串起来，并使之上升为中国的（首先是作者自己的）理论体系。本书各章都

是独立的并各有其特色，但它们之间又是相互联系的。它们是在统一的撰写原则和规范下，相互联系在一起的，因而本书是一个统一的整体。

第三，本书各章的作者都是我国沉积学界各个研究领域中的卓有造诣的专家，他们都仅只撰写自己最熟悉和最富有见地的内容，一般是每位作者只写一章，最多两章。这样，就从根本上保证了本书的先进性和代表性。也只有这样，本书才能反映和代表我国当今沉积学的现状、水平和特色，本书才能称之为中国沉积学。

在本书即将出版的时候，要特别感谢我国沉积学界的老前辈叶连俊、业治铮、袁见齐、曾鼎乾、吴崇筠教授等。叶连俊、袁见齐、曾鼎乾、吴崇筠教授等均参加了本书的撰写工作，叶连俊教授还为本书题了词“沉积学在中国大地上开了花结了果”，这是对本书的最大支持。还要感谢关心、支持或参与过本书组织及编写工作的何镜宇、孙枢、范嘉松、李继亮、陈昌明、信荃麟、刘孟慧、何起祥等教授。尽管由于种种原因，他们为本书撰写文章的意愿未能实现，但他们对本书的关心和支持的情谊则是十分珍贵的和应当永远感谢的。

还要特别感谢中国石油天然气总公司科技发展局的石宝珩副局长的大力支持。当他得知我们正在艰难地自我出钱筹集出版费用时，他以极大的热情支持了我们。在他的建议下，总公司的金钟超副总经理很快就作了批示：本书由石油工业出版社负责出版并负责全部出版费用。现在，石油工业出版社已把本书列为**重点图书**。这样，就解决了我们最难解决的困难和问题。在此，谨向金钟超副总经理、石宝珩副局长、石油工业出版社的领导、责任编辑和全体工作人员，表示衷心的感谢。

还要感谢地质出版社、中国矿业大学出版社、石油大学出版社和云南科技出版社的领导和编辑同志们，他们均曾先后表示愿意出版本书。尽管他们未能承担本书的出版任务，但他们对本书出版工作的巨大支持，将使我们永远难以忘怀。

还要感谢我的学生和助手辛文杰、蒋盘良、鲍志东、韩征、金振奎、何幼斌、陈月清、温顺久等，他们在本书许多章节的打字、抄写、照片图版的粘贴和植字、目录和序的英文翻译以及各次会议的接待工作等方面，做了大量的工作。

还要着重感谢本书全体作者和编委会全体成员的支持。各位作者都多次地和不厌其烦地按编委会和我提出的修改意见修正稿件，直到满意时为止。编委会的成员，尤其是几位副主编，特别是王英华教授，更是全力支持我的工作，为我分担任务和排忧解难。这种高尚风格和深厚情谊深深激励着我。没有这种支持，我是不可能胜任本书主编这一艰巨任务的。

最后，还要感谢长庆石油勘探局副局长、总地质师杨俊杰高级工程师题写本书书名“中国沉积学”。

本书还有一些欠完善之处。如本来还想组织和撰写一些章，如硅岩、河流沉积、风暴沉积、比较沉积学、板块与沉积、沉积铁矿、砂矿、中国古代的沉积学等，但由于种种原因未能实现。又如一些章的安排顺序也可能有欠当之处。凡此等等。

撰写和出版一部反映和代表我国当今沉积学研究现状、水平和特色的专著，是一件相当繁重和艰巨的工作。本书只能算是开了个头。最热诚地希望国内外沉积学界和地质学界的广大同行以及本书的广大读者指教。

冯增昭

1992年元月

于石油大学，北京



## PREFACE

In the last several decades, great progress has been made in the study of sedimentology of our country, and the research achievements are numerous. It will be significant to cooperate with the experts of the various fields of sedimentology of our country and to write, by the same principles and regulations, a monograph which can reflect the state, level and characteristics of the study of sedimentology of our country today, in order to show the research achievements, summarize the experiences, point out the direction of future study, serve the four modernizations, and also contribute to the development of international sedimentology.

As early as 1986, I discussed this matter with Prof. Wang Yinghua, Prof. Liu Huanjie and Prof. Sha Qing'an, and they all agreed. However, this was not carried out immediately due to various reasons.

In February 1988, I sent to the experts of various fields of sedimentology of our country the "Preliminary proposal to write *Sedimentology of China*", in which the nature and contents of the book, principles and ways of writing, and funds raising for publication expenses were suggested preliminarily, so as to get agreements, supports and advices from them. Soon, they answered. They all enthusiastically supported this idea, and proposed many constructive suggestions. Some of them even sent me the synopses of the chapters that they wanted to write. I was deeply moved by their activeness and enthusiasm.

With their supports, an editorial board was established in December 1988 so as to plan and carry out organizing, writing, revising, and editing of the book, as well as raising of funds for publication expenses and so on.

Since February 1988, the editorial board and all authors have done a lot of work. Two author forums and five editorial board conferences were held; between the chief editor and the associate chief editors, many working meetings were called, and exchanges of opinions were made many times; between the chief editor and the authors, about 300 letters were written, and many times of discussion were made; the chief editor and associate chief editors contacted many times with and asked advices from quite a few predecessors of the sedimentological circles of our country, contacted with many publishing houses, and consulted the

leaders of the China National Petroleum Corporation and the University of Petroleum for instructions; each chapter was reviewed and revised many times; a lot of efforts were made to raise money for publication. Now, every important problem has been solved. The final manuscript of this book has been finished, and will be published by the Petroleum Industry Press.

The whole book includes 3 parts, 35 chapters. It is composed of about 1,500,000 words, 483 figures, 72 color and black-white photoplates, and is written by authors from 25 units of the petroleum industry, geology, coal industry, metallurgy industry, nuclear industry, universities and the Academy of Sciences of China. It took four years to finish this book. This is a very large project indeed.

This book shows 3 characteristics:

1. The original data, figures, photoplates, examples, viewpoints, methodology and theories are basically all Chinese, i. e., basically all born and brought up on Chinese native earth, and have the rich flavour of China, the flavour of Chinese earth. Certainly, foreign data and viewpoints ought to be cited if necessary, otherwise, it is closing ourselves to international intercourse. But most of them must be Chinese, otherwise, this book would not be called *Sedimentology of China*. The more we want to have a place in the international circles of sedimentology and geology and contribute to the development of sedimentology and geology of the world, the more we should put emphasis on our own creative work. This is the dialectics. This book is exactly a creative work of our own.

2. This book is a monograph. In this book, each chapter is based on the practical data from China, which are linked together by the author's own viewpoint so as to form a theory system of China, first of all, a theory system of the author's own. The chapters in this book are independent from each other, and each has its own characteristics. But on the other hand, the chapters are related to each other, they are linked together by the same principles and regulations of writing. Thus this book is a whole.

3. The authors of this book are the experts of great achievements in the sedimentological circles of our country. They write only the contents which they are most familiar with and have deep insight in. Every author writes only one chapter, at most two chapters. Thus the quality of this book can be guaranteed. Only thus can this book reflect and represent the present state, level and characteristics of the sedimentology of our country today and can be called *Sedimentology of China*.

Before this book is to be published, special thanks are given to Professors Ye Lianjun, Ye Zhizheng, Yuan Jianqi, Zeng Dingqian, and Wu Chongyun, the fore-runners of the sedimentological circles of China, who all took part in writing this book. Professor Ye Lianjun also wrote the inscription "**Sedimentology has blossomed and fruited on the grand earth of China**". These is the greatest supports for this book. We are also grateful to Professors He Jingyu, Sun Shu, Fan Jiasong, Li Jiliang, Chen Changming, Xin Quanlin, Liu Menghui and He Qixiang, who were concerned with, supported or took part in the work of organizing and writting of this book. Although their wishes to contribute articles to this book were not realized, their kindness is appreciated.

Special thanks are given to Deputy Director Shi Baoheng of the Bureau of Science and Technology Development of China National Petroleum Corporation. He had supported us with utmost enthusiasm when he was aware that we were arduously raising funds for publication on our own. Under his suggestion, Vice President Jin Zhongchao of the Corporation soon made the instruction: the Petroleum Industry Press will be responsible for publication and all publishing expenses of this book. Now, this book is put into the list of **Important Books** of the Petroleum Industry Press, and will be published with the fastest speed and highest quality. Thus, our most difficult problem is solved. Here, we thank sincerely Vice President Jin Zhongchao, Deputy Director Shi Baoheng, and the leaders, duty editor and all other members of the Petroleum Industry Press.

Many thanks are given to the leaders and editors of the Geological Publishing House, Press of China University of Mining and Technology, Press of University of Petroleum, and Press of Yunnan Science and Technology, who all expressed the wishes to undertake publication of this book. Although their wishes was not realized, their great supports for this book will not be forgotten.

Many thanks are given to my students and assistants Xin Wenjie, Jiang Panliang, Bao Zhidong, Han Zheng, Jin Zhenqui, He Youbing, Chen Yueqing and Wen Shunjiu, who did a lot of work in typing, transcribing, glueing of photo-plates, translating the preface and the table of the contents from Chinese to English, and reception of all conferences and meetings of the editorial board.

Finally, thanks are given to all authors of this book and all members of the editorial board. All authors revised their manuscripts repeatedly without complaining according to suggestions by the editorial board and me until the manuscripts were satisfying. The members of the editorial board, especially the associate chief editors (especially Professor Wang Yinghua) made all efforts to

support my work, shared my burden and help me to overcome difficulties. I am encouraged greatly by the lofty style and profound friendship. Without these supports, it would be impossible for me to be competent for the hard work of the chief editor.

There are some incompleteness in this book. Originally this book was intended to include some chapters, such as siliceous rocks, fluvial sediments, storm sediments, comparative sedimentology, plate tectonics and sedimentation, sedimentary iron ore deposits, sand ore deposits, and sedimentology of ancient China. But due to various reasons, these were not realized. In addition, the arrangement of some chapters of this book might not be appropriate.

It is a very arduous work to write a book to reflect and represent the state, level and characteristics of the study of sedimentology of China today. This book is just a beginning. We sincerely hope our colleagues in the circles of sedimentology and geology and the reading public of this book can give suggestions for further improvement.

**Feng Zengzhao**

University of Petroleum, Beijing

February, 1992

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