# PREFACE

About 30 years elapsed since the Chemistry and Technology of Oil and Gas textbook intended for students of specialized secondary schools and prepared by V. N. Erikh, M. G. Rasina, and M. G. Rudin has been published (Edition 3, Leningrad, Khimiya Publishing, 1985).

In the past 25–30 years the global oil-refining industry has made rapid progress in improving the oil conversion ratio; new destructive processes have been developed; ecological requirements imposed on the petroleum product quality have been dramatically tightened. Integrated oil-refining and petrochemical complexes with a capacity of more than 50 MTA have been built.

Oil production requires ever growing efforts year by year; the crude oil quality goes from bad to worse. At present, the oil refining plants have to process high-sulfur heavy oils with high content of metals and resinous-asphaltenic substances up to bituminous sands. In these circumstances new technologies and new approaches to oil refining are required.

There is a long overdue need to have available a textbook making a synthesis of new achievements in this sector, new notions and trends in its development. The authors of this textbook have kept a general structure of the preceding textbook supplementing it in accordance with the up-to-date program for bachelors of higher education institutions and students of petroleum secondary schools.

Recent data on oil and gas production have been added; a section related to the history and prospects of developing the oil refining industry has been extended. The latest technical regulations for petroleum products, standards and specifications have been taken into account. Up-to-date data on the crude distillation and equipment for atmospheric and vacuum distillation units have been presented. New physicochemical processes of oil conversion have been reviewed. Information on refinery off-site facilities has been presented in more detail.

This *Chemistry and Technology of Oil Refining* textbook is divided into four parts: Part I discusses the properties of oil and petroleum products and crude distillation processes (Chapters 1 through 7); Part II presents physicochemical processes of petroleum and refinery gas conversion (Chapters 8 through 11); Part III deals with lubricating material production (Chapters 12 through 14); Part IV describes off-site facilities (Chapters 15 and 16).

The authors hope that the new textbook will be useful not only for students of secondary and higher education institutions but also for a wide range of skilled workers and specialists of oil refineries and petrochemicals plants.

In conclusion, the authors are grateful to the top management of Gubkin Russian State Oil and Gas University (Prof. A. I. Vladimirov and Prof. M. G. Martynov), the staff of Oil Refining Technology Department of the same university, Prof. V. A. Khavkin, who took the trouble to review this textbook, for the valuable advice given during the preparation of this publication. The authors are grateful to D. Yu. Makhin for considerable contribution to the preparation of publication.

We will appreciate and thoroughly analyze any criticisms concerning the textbook content.

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