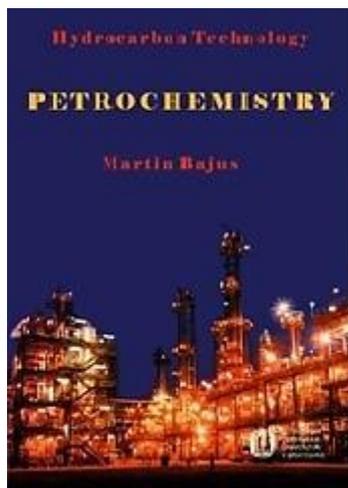


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## BOOK REVIEW

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Martin Bajus :

### **Hydrocarbon Technology - Petrochemistry**

Issued by Slovenská chemická knižnica FCHPT-STU  
Bratislava, 2017, 1. Edition, 430 pages  
Paperback, price 9,10 EUR  
ISBN 978-80-89597-80-2

At the beginning of 2018 a fresh book on Hydrocarbon Technology – Petrochemistry, published by the Slovak Chemical Library at the Faculty of Chemical and Food Technology in Bratislava appeared on the book market. You can get the book from the bookseller Malé Centrum. The author of the book is Professor Martin Bajus, a Slovak leading expert in refinery, petrochemical, energy and recycling technologies. He started a school of pyrolysis at the Slovak University of Technology. The distinctive features of the successful Bratislava School of Pyrolysis are not only the results gained from research but also the industrial applications of these results into recommended petrochemical and recycling technologies, not only in Slovakia but also abroad (Czech Republic). Professor Bajus is one of the top Slovak scientists and inventors in the field of chemical technology. He is still active in science and as a teacher at the FCHPT.

This university textbook introduces the reader to current and interesting texts, written in a modern style of English. It represents the topical subject matter in a complex way. A wide and extensive coverage of the 430-page issue surely was a great challenge and required effort and patience on the side of the author. In particular, the most valuable is the information based on huge knowledge of the author on the hydrocarbon technology. The book is especially suited for university educators and students that study in bachelor, master or doctoral study programmes that train in chemical technology, possibly focussed on petrochemistry.

The second book in the series on hydrocarbon technology deals with petrochemical changes of hydrocarbons coming from oil and natural gas. These hydrocarbons are obtained in refinery processes and are the subject of the first book.

In the introduction, the author points out the importance of petrochemical processes in chemical technology in the direction: chemical science → chemical technology → hydrocarbon technologies → petrochemistry. The textbook explains basic principles and introduces causal relations between the decisive chemical and physical phenomena. The author does not have the intention to elaborate hydrocarbon technologies related to petrochemistry in an encyclopaedic form. In the first place, the author favours orientation in concepts before facts. The book Hydrocarbon Technology - Petrochemistry presents the basics of those chemical processes that are the building

stones of chemical technology. These processes include: thermodynamics, chemical kinetics, reactor calculations, as well as industrial catalysis.

Professor Martin Bajus has written so much needed pedagogically excellent text, which has been missing in the Slovak market for almost 30 years. He has developed an original concept of petrochemistry, supported by four pillars. The elementary source are hydrocarbons from crude oil and natural gas. Alternative raw materials and alternative technologies can be exploited because of excessive and cheap propane, ethane and methane from shale, strand and natural gases.

In particular, this applies to propylene, a growing production of which is gradually shifting from pyrolysis of liquid feedstocks to pyrolysis of lighter shale condensates. The utilisation of shale gas is exponentially growing, especially in the United States. The author also deals with the processing of biomass and waste. These two are understood as complementary to those resources that are to replace fossil raw-materials in the future.

The petrochemical industry is based on four pillars: pillar A is alkene, pillar B covers BTX aromatics, pillar C represents the C<sub>1</sub>-technologies, and pillar D is heavily diversified by petrochemicals containing oxygen, halogens, nitrogen and sulfur.

The author has logically chosen from a wide range of processes. To know about individual processes means to understand the basics of the culture of chemical-engineering. As an example one can mention successful processes in oil refinery or production of chemicals from synthesis gas. Chemical engineers have had tremendous success in the development of high-capacity chemical technologies (production of methanol, Fischer-Tropsch synthesis, ammonia). However, in some other areas in the past, they were not so successful. Presently, these processes are gaining more and more importance. Such processes can be found in hydrogen technologies, bio-refineries, recycling technologies, microchannel technologies and nanotechnologies. These technologies are the subject matter of separate chapters of the book. Recently the focus has been lifted to the intensification of processes, such as energy technologies and sustainable technologies.

Most of the chapters introduce the individual processes in clear explanatory drawings and simplified flow-chart schemes presented in colour. For the sake of better clarity of the technology schemes, most of the depicted schemes exclude controlling systems, valves or pumps. After studying the book students will improve their conceptual thinking to design new processes.

The presented book serves as the basic study material for many subjects studied at the Faculty of Chemical and Food Technology, however, for some subjects it is just a supplementary study material:

- Petrochemistry
- Organic technology and petrochemistry
- Crude oil and hydrocarbon technologies
- Energy materials and technologies
- Recycling technologies
- Natural gas
- Alternative fuels
- Catalysis

I believe that the book Hydrocarbon Technology – Petrochemistry will be a welcome study material both for the students of the Faculty of Chemical and Food Technology, STU, but also for other students studying for higher education in the Slovak Republic. As a teacher with long-time practical experience I can recommend this book as a study material to all students that study chemical technology or similar field of science.

Viktor Milata