

## **CHARACTERIZATION and PROPERTIES of PETROLEUM FRACTIONS**

This latest in a series that began in 1928 with publication of MNL 1 (formerly STP 7A) on “Significance of Tests for Petroleum Fractions”, is an invaluable new resource for everyone involved in characterizing petroleum fractions, or the design or optimization of production and processing units. It is a near-encyclopedic compendium of thermodynamic and physical property data on crude oil and petroleum fractions ranging from gases to heavy residuum. More than 100 properties are discussed, and over 600 predictive and correlative methods included. Many of these include illustrative examples and their solutions.

Physical and thermodynamic data are critical input to process simulators, but these data must be chosen and used with care. The old adage “garbage in—garbage out” is especially applicable to today’s complex programs. In compiling the data included in this book, Dr. Riazi has relied on decades of professional experience and has been able to select data generally accepted to be accurate

The discussion provided in each of the nine chapters provide detailed definitions of properties, and walk the reader through numerous examples illustrating application of the data to petroleum characterization. Most chapters include a “Summary and Recommendations” Section providing readers such as myself that have a limited familiarity with some of the material a helpful and informative “quick read.” Each chapter includes an extensive list of references. There is an Appendix of “ASTM Definitions of Terms” that serves as a useful Glossary, and the Index is excellent.

In general, the book is well edited, but there are occasional typographical and grammatical errors. These are minor and do not detract from the book's overall importance and usefulness.

This book is an invaluable resource for those working in process modeling and petroleum characterization. It will also serve as a textbook for graduate students and, as such, a number of problems are provided at the end of each chapter.

I recommend its addition to the reference collection of everyone working in process simulation/modeling or petroleum characterization

**Harry N. Giles**, U. S. Department of Energy, Washington, DC

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*“Characterization and Properties of Petroleum Fractions is a tremendous resource to anyone working in the area of hydrocarbon analysis, properties estimation and process modeling. For the first time, up-to-date information and validated procedures are in one place and well-explained with concise charts and tables, instead of spread over two decades of journal articles. This manual is a significant contribution to the petroleum industry.”*

**Jim McGehee**, UOP, LLC, Refining Research & Development

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“The new ASTM book entitled *Characterization and Properties of Petroleum Fractions* by Prof. M.R. Riazi is perhaps the most comprehensive and important new text on petroleum production and processing published in many years. Topics covered in this book include: properties of pure hydrocarbons; characterization of petroleum, crude oils and reservoir fluids; physical, transport, and thermodynamic property prediction and estimation methods; and phase equilibrium calculations. Numerous illustrative examples and problems throughout the book renders the book not only useful as a reference text for the practicing engineer and chemist working in the field but it is also as an excellent text for a university course on the subject. This book will be an invaluable resource for those working in the petroleum industry and related fields.”

**George E. Totten, Ph.D.**, G.E. Totten & Associates, LLC, Seattle, WA

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“The book written by Dr. M.R. Riazi uniquely combines hydrocarbon characterization and thermodynamics for estimation of nearly all important thermophysical properties required in design and operation of units needed for petroleum production, processing, transportation, and storage. In addition, the book discusses fuel quality and specifications required for marketing, distribution, safety, and environmental concerns. Dr. Riazi’s methods have been in use in the petroleum industry for more than two decades and the book nicely shows development of many predictive methods. This comprehensive text will be an invaluable resource for the people working in various sectors of the oil and gas industries for many years to come.”

**Jose Luis Pena Diez, PhD.**, Repsol—YPF, Madrid, Spain

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“*Characterization and Properties of Petroleum Fractions* is a vital subject for engineers faced with the separations involved in the fossil fuels industries. Originally trained to deal with binary systems, engineers face a major challenge in how to deal with many-component systems. This book addresses these problems.”

**Professor Philip T. Eubank**, Texas A & M University

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