When the 1st edition of this Manual was published in 2003, it was the most comprehensive treatise on petroleum technology and properties to appear since Petroleum Products Handbook, edited by V.B. Guthrie, was published in 1960. Now, just 16 years later, the 2nd updated and expanded edition appears, with topics covered expanded from 38 to 49 chapters. This reflects, in part, the numerous advances that have been made in petroleum technology in less than two decades. And, growing interest in topics such as “Used Oil and Re-refining”, “Biodeterioration”, “Particle Counting: Fuels and Lubricants”; and “Temperature Measurement.” Underscoring the changes taking place in the petroleum industry, the chapter on “Marine Fuels” that appeared in the 1st edition has been eliminated. In fact, the ASTM specification for these was withdrawn in 2003.

The volume is divided into four topical sections: “Petroleum Refining Processes for Fuels and Lubricants Basestocks” (five chapters); “Fuels: Properties and Performance” (four chapters); “Hydrocarbons and Synthetic Lubricants: Properties and Performance” (16 chapters); and “Performance/Property Testing Procedures” (24 chapters).

As with the 1st edition, the Manual lacks a chapter on “Sampling”, although the topic is touched upon briefly in the chapter on “Static Petroleum Measurement.” Still, a standalone chapter on the subject would enhance the Manual’s comprehensiveness. This aspect is fundamentally important to obtaining samples truly representative of the products discussed so that they can be tested for workmanship and conformance to specifications.

The extensive Index enables the reader to quickly navigate to issues of interest. An important aspect of this is the listings of “ASTM standards and tests” with numerous subheadings such as “lubricants”, “volatility”, and “oxidation testing” among others.

This publication is near-encyclopedic and provides detailed discussion of a large range of fuels and lubricants and the test methods used in determining their properties and performance characteristics. It is well illustrated which assists the reader not familiar with a topic in gaining an understanding of the test equipment used or in the concept involved. Chapter references provide a useful source of supplemental readings for those needing further information.

I highly recommend this publication for the research scientist, laboratory technician, those preparing purchase and performance specifications, and others involved in purchasing or using the products described. It is also an essential companion volume to ASTM’s Manual 1: Significance of Tests for Petroleum Products.

Harry N. Giles