

Book Review

Spectrographic Analysis of Petroleum Products and Lubricants, R. A. Kishore Nadkarni, editor, Monograph 9, ASTM International, West Conshohocken, PA, 2011.

In the opening chapter, Dr. Nadkarni writes “The goal of ...this monograph is to bring together the most widely used spectroscopic techniques used for analyzing petroleum products and lubricants.” This has been achieved effectively and admirably, and in a way that will serve a broad cross-section of petroleum analysts.

The volume is divided into three parts:

1. Analytical Basics;
2. Analytical Technology; and
3. Analytical Applications.

In these, twenty-four chapters provide a detailed discussion of the fundamentals of the techniques and their application in the oil analysis field. Part 1 includes chapters on Calibration Protocols and Quality Assurance; Part 2, chapters on Atomic Absorption Spectrometry, Applications of ICP-MS, and Neutron Activation and Gamma Ray Spectrometry; and Part 3, chapters on Determination of Mercury in Fossil Fuels and Elemental Analysis of Crude Oils.

Chapter topics include calibration protocols, quality assurance concepts, reference materials, statistical data handling, and analyzing and interpreting proficiency. Each chapter is well illustrated with figures and tables assisting the reader in selecting appropriate techniques and understanding their principles, and provides considerable bibliographical references.

Overall, twelve spectroscopic techniques are examined. These include AAS, ICP-AES, ICP-MS, NAA, NMR, and ion chromatography. Their application to a variety of petroleum products including crude oils, naphthas, middle distillates, heavy oils, and biofuels is discussed.

While the volume is expensive, its reference value – especially as a single source of discussion on spectroscopic methods – outweighs the cost. I recommend its addition to the reference collection of every petroleum laboratory involved in some way in the spectroscopic analysis of petroleum.

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