

New publications

● R. T. Whillans and D. A. Cranstone. *Canadian reserves of copper, nickel, lead, zinc, molybdenum, silver and gold as of January 1, 1979*. Hull (Canada), Canadian Government Publishing Centre, 1980. C\$2.40.

This publication represents an accurate and conscientiously compiled record of reserves. It discusses changes in reserves from year to year, applications of data on ore reserves, and compilation procedures.

● Brewer, Stephen. *Solving problems in analytical chemistry*. New York, Wiley, 1980. 512pp. \$8.95.

A readable, comprehensive, and practical guide to the typical calculations required for an introduction to the topic. Presents descriptions with detailed worked-out examples and numerous practice problems followed by detailed solutions. Reviews topics in algebra and graphing; requires no calculus. Includes background on common procedures, reagents, and instruments, as well as computer-generated tables and graphs of distribution (alpha) functions for weak acids. Designed to be used with a hand calculator that features scientific notation, logarithms, and a y^x key.

● E. K. Turkdogan. *Physical chemistry for high temperature technology*. New York, Academic Press, 1980. 464 pp. \$49.50.

Most of the research efforts relating to high-temperature technology in the first half of this century were in the areas of metallurgy, glass technology, ceramics, and refractory materials. The advent of nuclear energy since the 1950s, the search for special materials for a wide variety of applications from solid-state electronic components to space rockets, and the ever-increasing demand for new technology of energy conversion have broadened the scope of the high-temperature technology that we have today. Increasing demands for exotic materials and processing techniques have opened up new avenues of research in high-temperature chemical and physical phenomena in, for example, thermochemistry, solid-state galvanic cells, mass spectrometry, spectroscopy, molecular beams, laser beams, plasma arcs, and so on. This book is intended for graduate students, research scientists, and technologists in the field of high-temperature technology of materials and their processing.

● G. B. Fettweis. *World coal resources*. Amsterdam, Elsevier, 1979. 416 pp. U.S. \$80.50 Dfl. 165.00

Although there is general agreement that the world's coal resources are vast in relation to both present consumption and to other fossil fuel resources, there is widespread disagreement on the actual size of these resources, the quantity of useable coal, and the methods employed to measure the resources. In this book, the author deals with these questions from an interdisciplinary viewpoint, which ranges from geochemical considerations to mining engineering and mineral economics.

● *Canadian mines: 1979 perspective*. Hull (Canada), Canadian Government Publishing Centre, 1980. C\$2.40.

This publication reports on the results of a joint federal-provincial undertaking aimed at monitoring, on

an annual basis, the supply systems for the most important mineral commodities being mined in Canada. Concise overviews are presented of the Canadian reserves situation, of the supply capability on the basis of current reserves alone, of recent commitments for bringing new mines on stream, and of the level of exploration and discovery.

● Clarence Karr (ed.). *Analytical methods for coal and coal products*, Volume 3. New York, Academic Press, 1979. 656 pp.

This book, the third volume in a comprehensive three-volume work, discusses analytical methodology for coal and coal products. It provides detailed presentations on the many analytical methods needed for the examination of coal, coke, fly ash, liquid fuels, gaseous fuels, and other coal-derived materials.

● Charles B. Gill. *Nonferrous extractive metallurgy*. New York, Wiley, 1980. 500 pp. \$30.00.

An up-dating of the extracting and refining processes used currently in the treatment of the major non-ferrous metals. Considers both pyrometallurgical and hydrometallurgical methods. Text divides metals into reactive and non-reactive, describes the similarities in treatment for the various metals, and details the specific process for each of the individual metals. Chapter on environmental considerations covers methods used to clean and dispose of contaminated air and water. Uses both imperial and metric units.

● M. Kuzvart and M. Böhmer. *Prospecting and exploration for mineral deposits*. Amsterdam, Elsevier, 1978. 432 pp. U.S. \$68.25. Dfl.140.00.

This book provides full coverage of industrial types of deposits; criteria for prospecting; geological and geophysical methods of prospecting for soil mineral deposits, oil, and gas; exploration, sampling, documentation of deposits; and economic evaluation of results from all stages of prospecting and exploration.

● Martin A. Elliott (ed.). *Chemistry of coal utilization*, supplementary volume 2. New York, Wiley, 1980. 3000 pp. \$150.00.

An in-depth review of the literature on coal technology and science. Topics include properties, origin, chemical reactions, handling, pyrolysis, combustion, gasification, liquefaction, and environmental factors.

● M. Radetzki and S. Zorn. *Financing mining projects in developing countries*. Aedermannsdorf (Switzerland), Trans Tech. Publications, 1979. 200 pp. SFr. 48.00 (hard cover), SFr. 38.00 (soft cover).

A major study that had its origin in the background material prepared for the UN Panel on International Mining Finance. The work includes an assessment of financial requirements for mining investments up to 1990, the internal and external sources of mining capital, and the developing role of public international agencies. It also examines possible new sources of mining capital for the developing countries. Appendices include a summary report of the conclusions of the UN Panel, financial statistics of mining enterprises in the developing countries, and a tabular presentation of

anticipated new mine, smelter, and refinery capacities and planned additions.

● Charles G. Schofield. *Homogenisation/blending systems design and control for minerals processing*. Aedermannsdorf (Switzerland), Trans Tech Publications, 1980. 332 pp. SFr.98.00 (hard cover), SFr.48.00 (soft cover).

The purpose of this book is to provide an introductory text for the unified treatment of raw material blending and homogenization systems for minerals processing, bringing together into one volume the techniques and principles involved in their design. The field of homogenization system design and control has made many notable advances in recent years. Such topics as optimal stockpile pre-homogenizer design and control in the face of random materials, quality variation, accurate mineral deposit characterization through the use of geostatistical techniques, the application and design of selective quarrying procedures, sampled data systems, optimization theory, and the accurate determination of processing unit dynamic models have received a great deal of attention, and present-day high-speed relatively inexpensive digital mini-computers are providing an even greater impetus to the application of these theories

and techniques and to the desire for a standard approach to the design and control of raw-material preparation systems.

● A. V. Smoldyrer and Y. K. Safonov (translator: W. C. Cooley). *Pipeline transport of concentrated slurries*. Aedermannsdorf (Switzerland), Trans Tech Publications, 1979. 176 pp. SFr. 115.00.

This translation from Russian covers a broad scope of worldwide research, engineering, and industrial operating experience in hydraulic transport of solid-liquid mixtures at high concentrations. The solids discussed include cement, mortar, calcined soda, kaolin, cellulose, paper pulp, sand, clay, loess, coal, peat, minerals, limestone, production wastes and tailings, sludge, agricultural feeds, and farm wastes.

● V. M. Karasik (translator: W. C. Cooley). *Slurry hydrotransport of minerals and tailings*. Aedermannsdorf (Switzerland), Trans Tech Publications, 1979. 156 pp. SFr.115.00.

● S. P. Turchaninov (translator: W. C. Cooley). *The life of hydrotransport pipelines*. Aedermannsdorf (Switzerland), Trans Tech Publications, 1979. 158 pp. SFr.115.00.

NIM reports

The following reports are available free of charge from the National Institute of Metallurgy, Private Bag X3015, Randburg, 2125 South Africa.

Report 2037

The removal of contaminants from recycled water in a mineral-flotation plant.

This report describes laboratory experiments on the determination of whether biologically activated sludge can be used for the removal of contaminants from flotation-plant recycle waters.

A synthetic sewage spiked with isopropyl ethyl thionocarbamate (Z-200) and with sodium ethyl xanthate (SEX) was passed through a small test plant that had a capacity of 2,5 litres. When the concentration of SEX in the sewage was 20 p.p.m., the test plant removed it completely. No more than 23 per cent of the Z-200 could be removed under the conditions described.

Report 2054

The determination, by X-ray spectrometry, of trace amounts of tin in titanium-bearing ores and concentrates and in siliceous materials.

The method involves the preparation of briquettes,

one of which consists of the sample material and an inert diluent, the other of the sample material and a standard reference material.

After the briquettes have been analysed, a correction is made for the background of the matrix, which is based on the intensity function, (peak - background)/background. No calibration graph is required.

The lower level of detection of the method is 10 p.p.m., and the relative standard deviation is 0,1 at a tin concentration of 100 p.p.m.

A computer programme for the off-line processing of intensity data is listed in an appendix.

Report 2063

Aerosol deposition and carbon-rod atomization of gold.

This report describes the determination, by flameless atomic-absorption spectrophotometry, of gold in solutions, the sample being introduced into the graphite furnace as an aerosol. The interference effects are similar to those encountered with the conventional method of sample introduction and are overcome in the same manner. The precision and sensitivity of the proposed method are superior to the conventional method, and the accuracy is as good.