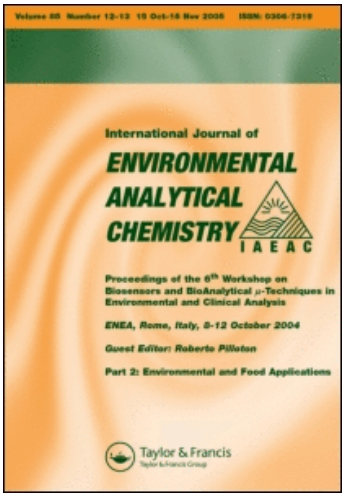

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Book Reviews

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Book Reviews

MATERIALS AND ENERGY FROM REFUSE (Proceedings of the 2nd Symposium, Antwerp, Belgium, October 1981), by A. Buekens *et al.*, Vrije Universiteit Brussel, Belgium, 680 pages (including many figures and tables, no index), paper board, format 294 × 210 mm, D/1981/0277/02, Koninklyke Vlaamse Ingenieursvereinigung v.z.w., B-2000 Antwerp (1981), in English, Fr. B. 3600.00.

The interested scientists and engineers find a lot of information about the success and failure of numerous ideas and concepts in the field of recycling, which were advanced and tested during the last decade. Current initiatives and studies, future developments and evaluations are discussed. Some invited plenary papers inform about the "State of the Art", research papers and poster presentations give new facts, and nine panel discussions lead to conclusions.

To inform the review reader about the fields which are covered, the chapter titles may be mentioned:

—Survey Papers
—Separation of Refuse
—Recycling of Cellulosic and Food Waste
—Recovery of Waste for Land Application
—Recovery of Waste in the Building Industry
—Recovery of Metals from Waste
—Refuse-Derived Fuel
—Biogas from Waste
—Incineration of Refuse
—Pyrolysis and Gasification of Refuse
—Institutional and Management Aspects
—Panel Discussions

Although the volume is more directed to engineers, the environmental chemist, the environmental analytical chemist, and the chemist involved in recycling of resources find valuable qualitative and quantitative information. As examples, some papers may be referred to, without being too selective and too restrictive:

—The Processing of Automobile Shredder Waste, by W. M. A. Kox and N. Boesmans, TNO Apeldoorn, The Netherlands
—Recycling of Aluminium from Metal Scrap by Rapid Solidification Processing, by L. Katgerman *et al.*, Delft University, The Netherlands
—Contribution to the Processing of Battery Scrap, by A. Farahmand, KHD Engineering, Cologne, Federal Republic of Germany
—Continuous Recuperation of Copper from Cyanide Containing Waste Waters by a Liquid Membrane Technique, by P. van Acker, *et al.*, Rijksuniversiteit Gent, Belgium
—Environmental Pollution Caused by Pyrolysed Household Waste, by M. Koch, Technische Universität, Berlin, Federal Republic of Germany
—On the Pyrolysis of Domestic Waste, by R. Berghoff, Landesamt für Wasser und Abfall, Nordrhein-Westfalen, Düsseldorf, Federal Republic of Germany
—Raw Materials by Fluidized Bed Pyrolysis of Plastic Wastes and Other Hydrocarbon Containing Materials, University of Hamburg, Federal Republic of Germany

Besides Belgian, Dutch and German authors, there are also American, British, Polish and Japanese contributors. After most papers, one finds useful literature references.

THE STRATOSPHERIC AEROSOL LAYER (Topics in Current Physics, Volume 28), by Robert C. Witten, NASA-Ames Research Center, Moffet Field, California, *et al.*, 152 pages (including 62 figures, and a subject index of 4 pages) linen, format 248 × 171 mm, ISBN 3-540-11229-4, Springer-Verlag, Berlin, Heidelberg, New York (1982), DM 54.00, US $25.20.

The book is discussing the sulfate aerosol layer—discovered by C. E. Junge and Co-workers in 1961—at altitudes of 18 to 19 km. The particles collected by impaction plates, wires or filters, or investigated by optical techniques from balloons, high-altitude research aircrafts, or satellites are produced through solar photodissociation of carbonyl sulfide (OCS) by ultraviolet light and/or by the injection of sulfur dioxide into the stratosphere during volcanic eruptions. The composition, size distributions, and temperature variations are now largely understood.

The monography of twelve co-authors from the University of Colorado, from the San José State University, from the NASA-Ames Research Center, from the NASA-Langley Research Center, from SRI International Menlo Park, and from R and D Associates, Marina del Rey

thus comprehensively treat the structure of the stratospheric sulfate aerosol layer, and its physical, chemical, optical, and morphological characteristics. Included are chapters on observations of precursor sulfur-bearing gases, *in situ* aerosol particle sampling, lidar and satelite measurement, pertinent laboratory experiments, models and model applications, and climate effects. Most of the work is very new. Also the environmental analytical chemist gets valuable stimulations in learning about the techniques either for sampling, or for measuring light scattering, composition and size distribution of particles, and for studying gas phase chemistry (including possible climate effects). These techniques involve also optical particle counters, optical radar (lidar), and measurement of the alternation of solar radiation. For some measurements it is important to make them *in situ*, because samples may change, when brought to lower altitudes (for instance they may take up ammonium).

To-day it is thought that OH is an oxidizing agent for SO_2 leading to HSO_x radicals. These can either form SO_3, which reacts with water to form H_2SO_4 vapor, or condense on preexisting aerosols and decompose in solution to get aqueous H_2SO_4. Nucleation is a very complex following step. Quite a few models of the aerosol layer were developed, and are described. For general characteristics coagulation, sedimentation, and transport has to be incorporated into numerical models. It seems that the removal of the particles from the stratosphere to the troposphere occurs principally in spring and summer. Anthropogenic changes to this aerosol layer are not yet important, but are possible. Each of the five chapters contains valuable literature references up to 1981.

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