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Crystal growing process. Allan I. Bennet (Westinghouse Electric Corp.). U.S. 3,053,915, Oct. 16, 1962. D.J.B.

Device for X-ray spectrochemical analysis by means of fluorescent radiation. Sjoerd Wytzes (North American Philips Co., Inc.). U.S. 3,060,314, Oct. 23, 1962. D.J.B.

Electrochemical determination of fluorides. George H. Farrar (Aluminum Co. of America). U.S. 3,053,901, Oct. 16, 1962. D.J.B.

Growing single crystals from a molten mass with a linear isotherm. Juraj Eckstein and Zdenek Wachtl. Czech. 94-996, April 15, 1960; *Chem. Abstr.*, 55 [3] 2217g (1961).

Method and apparatus for the continuous colorimetric determination of the individual components of a [liquid] mixture. Wolfgang Grassmann and Kurt Hannig. U.S. 3,059,524, Oct. 23, 1962. D.J.B.

Method and apparatus for operating an analytical mass spec-

trimeter with a getter-ion pump. Ernest W. Boyer (Continental Oil Co.). U.S. 3,057,996, Oct. 9, 1962. D.J.B.

Method for the growth of preferentially oriented single crystals of metals. Theodore H. Orem (United States of America as represented by the Secretary of Commerce). U.S. 3,060, Oct. 23, 1962. D.J.B.

Process for separating rare earths and yttrium by ion exchange resin. Pawel Krumholz and Kasimierz J. Brill. U.S. 3,054,655, Sept. 18, 1962. D.J.B.

Treatment of zeolitic molecular sieves to inhibit polymerization of olefins. N. V. de Bataafische Petroleum Maatschappij. Brit. 842,431, July 27, 1960; *Chem. Abstr.*, 55 [2] 1963f (1961).

See also Sect. V: Elastic stresses produced by indentation plane surface of a semi-infinite elastic solid by an elastic sphere punch.

XV—General

Glass dust—a study of its biologic effects. P. Gross, Marian L. Westrick, and J. M. McNerney. *A.M.A. Arch. Ind. Health*, 21, 10-23 (Jan. 1960); *APCA Abstr.*, 5 [10] 7 (1960).—A study on animals showed no effect of glass dust and glass flakes on the conjunctiva. No toxic or traumatic effect was demonstrable on the gastrointestinal tract. There was no bronchial disease attributable to the dust. Compared with kaolin, fine glass dust was even more benign in pulmonary effects because the stored dust remained alveolar instead of occupying interstitial positions and therefore was more readily mobilized and cleared from the lung.

Histology of iron deposits in silicosis among porcelain workers. H. Otto and R. Maron. *Arch. Gewerbepathol. Gewerbehyg.*, 17 [2] 117-26 (1959); *APCA Abstr.*, 5 [8] 9 (1960).—Earlier work indicated that normal lungs had an iron content, measured as Fe₂O₃, as high as 3.4 g with an average of 0.3 g. Similarly measured, the content of the lungs of persons who had worked in dusty industries ranged from 0.4 to 10.0 g. The authors made a histological and histochemical study of 40 cases of porcelain silicosis. The iron reaction was typical only of severe siderosis; in a low-grade silicosis with predominantly tubercular damage, the iron reaction was correspondingly slight, indicating a possibility of the use of this reaction in a differential diagnosis.

Hygiene characteristics of mica dust. I. K. Pushkina. *Gigiena i Sanit.*, 25 [8] 13-23 (1960); *APCA Abstr.*, 5 [11] 2 (1961).—X-ray examinations of workers at industrial plants using mica indicate the possible occurrence of chronic lung diseases of pneumoconiotic etiology.

Impact of materials science and materials engineering on ceramic engineering. Joseph A. Pask. *Am. Ceram. Soc. Bull.*, 42 [1] 23-24 (1963).

Methods of preparation of silica-containing dusts for use in biological research. E. Occella and G. Maddalon. *Med. Lavore*, 52 [5] 382-90 (1961); *APCA Abstr.*, 7 [12] 5 (1962).—The mineralogy laboratory of the Clinica del Lavoro of Milan Univ. has prepared a series of samples of fine silica-containing or inert dusts, classified and defined granulometrically, for the study of the etiology of silicosis. The origin and synthesis of the prime materials (quartz, opal, diatomaceous earth, chalcidony, tridymite, cristobalite, silica glass) are reviewed, together with grinding techniques and methods of classification used to obtain dusts mostly <3μ in diameter.

Pathogenicity of glass reinforced plastics—experimental inquiries by injection or external application techniques. G. W. H. Schepers. *Arch. Environ. Health*, 2 [6] 20-34 (1961); *APCA Abstr.*, 7 [4] 7-8 (1961).—The tissue damaging effects of flake glass and of two varieties of Fiberglas plastic with a calcium carbonate filler were explored. Although all these substances are comparatively inert, the Fiberglas plastic with a calcium

carbonate filler produced slightly more local reaction than with a calcium sulfate filler. Flake glass had the least effect. None of the substances caused fibrosis except Fiberglas implant subcutaneously.

Plant organization for quality control. G. F. Finzer. *Can. Ceram. Soc.*, 31, 104-105 (1962). J.J.I.

Production of antibodies by quartz and beryllium oxides. A. Collet, G. A. Voisin, and F. Toullet. *Arch. Environ. Health*, 2 [4] 409-17 (1961); *APCA Abstr.*, 7 [1] 6 (1961).—Three groups of guinea pigs were used: a control group, a group given injections of quartz + homologous cells + homologous serum, and a group given injections of beryllium oxide + homologous cells + homologous serum, according to the usual method for passive immunization. The results showed that no antibodies were formed against the substances tested. None of the animals showed hypersensitivity to quartz, BeO, or homologous serum. A moderate hypersensitivity was produced in animals of the two treated groups for homologous polysaccharide leukocytes.

Some oxidative and hydroxylation actions of quartz—possible relation to the development of silicosis. L. W. Mar and J. S. Harrington. *Nature*, 188, 1173-74 (Dec. 31, 1961); *APCA Abstr.*, 7 [1] 7 (1961).—The existence of a special surface activity possessed by siliceous dusts and silicates has been reported. A correlation appears to exist between the oxidizing activity of the dusts and the known fibrogenic potential of materials examined. A connection between particle size activity also seems apparent in coarse quartz and other quartz dusts of a smaller size.

Sudan's ceramic industries. A. Lee Bennett. *Cer. News*, 11 [8] 14-15 (1962).—B. describes the manufacture of brick and sewer pipe in open-air plants near Khartoum. D.J.I.

Types of asbestos, their study by optical methods, and their pathogenic action. K. G. Schmidt. *Staub*, 20 [6] 173 (1960); *APCA Abstr.*, 7 [1] 4 (1961).—With the polarizing and phase contrast microscopes it is comparatively simple to distinguish eleven types of asbestos. Chrysotile, amosite, crocidolite asbestos are dangerous, and tremolite or anthophyllite may cause illness. Too little is known about the other types. All asbestos dusts should be treated as being injurious to the lungs.

PATENT

Light-scattering coatings for the inside of light bulbs. P. H. W. Haaijman, Gerardus H. Janssen, and Petrus C. van Linden (N. V. Philips' Gloeilampenfabrieken). Dutch 904, April 15, 1959; *Chem. Abstr.*, 55 [5] 4914g (1961).

XVI—Books

Advances in X-Ray Analysis: Vol. 5, Proceedings of the Tenth Annual Conference on Applications of X-Ray Analysis, August 1961. Edited by William M. Mueller. 1962. Plenum Press, New York 11. xi + 564 pp., illus. \$17.50.—This volume contains 48 of the 56 papers presented at the conference. A particular merit of this series of volumes is their rapid publication

after the actual conferences. Many of the papers obviously deal with work in progress rather than with completed investigations, and in the discussions which are recorded, some authors agree that their work is nowhere near completion. The discussions make very interesting reading, in some cases bringing out the inadequacies of the methods used and in other cases providing

SiC polytype, 111 R, was discovered, and its structure is discussed. 3 figs., 31 refs. G.B.

X-ray study of aurumite. Yukio Takano. *Am. Mineralogist*, 46 [7-8]: 812-22 (1961). 3 figs., 4 tables, 15 refs.

PATENTS

Apparatus for presenting source particles to a mass spectrometer. Donald C. Damoth and John M. Sauri (Bendix Corp.). U. S. 3,075,393, Feb. 5, 1963. D.J.B.

Growth of single crystals of corundum and gallium oxide. Joseph P. Remeika (Bell Telephone Laboratories, Inc.). U. S. 3,075,831, Jan. 29, 1963. D.J.B.

X-ray spectral analysis. Joshua Ladeil and Nathan Spielber (North American Philips Co., Inc.). U. S. 3,072,739, Jan. 8, 1963. D.J.B.

See also Sect. IX: (patent) Mullite synthesis.

XV—General

Abbreviations in Russian abstract journals covering chemistry and related fields. Joseph J. Gwirtsman. *J. Chem. Doc.*, 3 [1]: 44-59 (1963).—About 700 abbreviations are listed with the complete Russian versions and the English equivalents. 5 refs.

Etruscan heritage: Ceramics industry growth spurts. Anon. *Italy Previews*, 5 [June]: 15-18 (1962).—A brief review. 11 figs.

New ideas and remuneration for them. Anon. *Sklar Keram.*, 10 [6]: 176 (1960).—Profitable ideas for improving Czech manufacturing methods or environment, the amounts saved by them, and the remuneration paid are given. 2 tables. A.D.

Principal methods used in dust concentration and the danger of dust in working places. Jose M. Caceres Hernandez. *Bol. Soc. Espan. Ceram.* (Madrid), 1 [6]: 361-69 (1962).—Dust as an industrial hazard can be classified as: (1) fibrosis producing dusts,

(2) toxic and irritant dusts, (3) inert dusts, and (4) explosive dusts. Details are given on the determination of the harmfulness of a dust. Silicosis and the Silikose-Forschungs Institut formulae are briefly discussed. 4 figs. V.R.P.

Produce larger profits by stretching working capital. LeRoy L. Kohn. *Brick Clay Record*, 141 [2]: 41, 49-51 (1962).—Account receivable financing is described. W.K.S.

Scientific research in the present and the future of the ceramic industry. Antonio Garcia Verduch. *Bol. Soc. Espan. Ceram.* (Madrid), 1 [6]: 377-88 (1962).—The need for research, the instrumentation used, and recent advances in ceramic technology and science are outlined. V.R.P.

Spanish building materials. Anon. *Spanish-American Trade*, 1962, No. 90, 17 + 9 pp.—A brief review. 22 photos.

XVI—Books

Advanced Materials—Refractory Fibers, Fibrous Metals, and Composites. C. Z. Carroll-Porczynski. 1962. Chemical Publishing Co., Inc., New York 10. 286 pp., 124 illus. \$11.75.—The title of this book suggests rather more than the author delivers. The book might better be known by its subtitle, "Refractory Fibers, Fibrous Metals, and Composites." Within the specialized field of high-temperature structural and insulating materials based on fibers, this book should be very useful to those concerned with engineering design and development.

The book is primarily a compilation of detailed information on the constitution, production, properties, and performance of a large number of proprietary fibers and composites. Long stretches of the text read as if lifted bodily from the manufacturers' technical brochures, but this does not detract from its utility. The information is well organized: materials related chemically or functionally are treated together under an appropriate chapter heading. Particularly noteworthy is the plentiful supply of up-to-date references to materials literature through 1961. Most chapters also have a long list of references to publications in the general area treated by the chapter, recommended for further reading. There is also a special addendum listing and abstracting twenty recent unclassified U. S. Government research reports in the field of refractory materials. The book is plentifully illustrated with graphs, diagrams, and photographs of successful applications.

The author should be gently chided for a certain inconsistency in his terminology. In the introductory paragraphs of the chapter, "Fused Silica Fibers," he quite properly disapproves of the use of the term "quartz" in connection with products made by the fusion of quartz, yet somehow he falls into the same error repeatedly in the remainder of the chapter! This is a useful book, and it should help the practical designer to make an intelligent choice from the new high-temperature fibrous materials that are becoming available. F. M. Ernberger

Chemistry of Cement: Vols. I, II—Proceedings of the Fourth International Symposium, Washington, October 1960. 1962. Natl. Bur. Std. (U.S.) Monograph, 1962, No. 43. Vol. I, pp. 1-573, \$5.75; Vol. II, pp. 574-1123, \$5.50. Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.—The lapse of nearly two years between the meeting and the publication of the proceedings reflects the monumental task required in editing and assembling the reports. These volumes should interest all disciplines concerned with the chemistry of inorganic solids. Important advances in the solid state chemistry of clinker and applications of new instrumentation in the study of the hydrated phases are recorded. The comprehensive reviews of all phases of cement chemistry and reports on special cements should prove indispensable references to cement scientists and technologists.

The editing, printing, and physical makeup of the volumes meet the highest standards.

The following papers are included in Vol. I: "Some problems associated with the growth of science," by Wallace R. Brode. "Cement research—retrospect and prospect," by F. M. Lea. "Phase equilibria and constitution of portland cement clinker," by R. W. Nurse.—This general report is followed by extensive discussions and supplemental reports. In the discussions, Roy describes the effects of pressure (due to grinding) on the polymorphism of $2\text{CaO} \cdot \text{SiO}_2$ (abbr. C₂S), and Kraemer and Strassen report that 4% MgO increases the alite ($3\text{CaO} \cdot \text{SiO}_2$ containing lattice substituents) content by 14% in cement clinker and describe the effects of Na_2O , K_2O , Na_2SO_4 , and K_2SO_4 on C₂S; Katharine Mather directs attention to the 2.720 X-ray diffraction line probably not being that of $3\text{CaO} \cdot \text{Al}_2\text{O}_3$ in clinkers. "Crystal structures of clinker constituents," by Fred Orcoway.—Advanced fundamentals are discussed. "Effect of minor components on the hydraulicity of the calcium silicates," by J. H. Welch and W. Gutt.—The effects of F and P_2O_5 are shown: 0.5 to 2.0% F reduces the strength markedly. "X-ray diffraction examination of portland cement clinker," by H. G. Midgley, D. Rosaman, and K. E. Fletcher.—The authors describe the application of X-ray diffraction for analysis of clinkers for phase contents and compare the measured and computed amounts of phases. In the discussions, Kantro *et al.* call attention to systematic errors in Midgley's method resulting in overestimation of amounts of C₂A. "Influence of reducing atmosphere on the constitution of clinker," by Y. Suzuki and T. Sasaki.—The authors substituted Fe^{2+} for Ca^{2+} in C₂S; quenched samples contained up to 2.8% FeO before dusting occurred, but slowly cooled samples exhibited dusting with much lower contents of FeO. "Reactions of coal ash with portland cement clinker during the burning process," by T. Heilmann.—Zoning within the clinker and absorption into pores of the molten ash are clearly shown. "Solid solution of alumina and magnesia in tricalcium silicate," by F. W. Locher.—L reports 0.8% Al_2O_3 and 2.5% MgO as maximum amounts substituting in alite: the amount of MgO is temperature dependent. "Reaction velocity in portland cement clinker formation," by Renichi Kondo.—K. discusses the reaction velocity of cement clinker formation of kiln feeds containing clay and blast-furnace slag. "Solid solutions of the minerals of portland cement clinkers," by N. A. Toropov.—T. discusses solid solutions of clinker phases and constituents and of Cr_2O_3 , BaO , and SiO_2 in C₂S and C₃S. "Decomposition of alite in technical portland cement clinker," by E. Woermann.—Alite in clinkers burned in a reducing atmosphere underwent decomposition due to exsolution of FeO at annealing temperatures as low as 1180°C.