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CERAMIC ABSTRACTS

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Chemical process and product. RALPH K. ILER (E. I. du Pont de Nemours & Co.). U. S. 2,739,074, March 20, 1956.—1. A solid consisting essentially of substrate particles of inorganic siliceous material having an average specific surface area of 1 to 900 $m.^2$/gm. and an average particle diameter greater than about 1 mμ and having chemically bound to the silicon atoms on the surface of the particles at least 100 —OR groups per 100 $m\mu^2$ of surface area of the siliceous material, where R is a substituted hydrocarbon radical in which the carbon attached to oxygen is also attached to at least one hydrogen atom, the substituted hydrocarbon radical having a neutral-reacting electron donor electronegative atom attached to a carbon atom at least 1 carbon atom removed from the oxygen atom of the —OR group, the electronegative atom being selected from the class consisting of nitrogen, oxygen, and halogens having an atomic number above 9, each R radical having 2 to 18 carbon atoms. D.J.B.

Continuous partition chromatography. TAKERU HIGUCHI (C. P. Hall Co.). U. S. 2,743,818, May 1, 1956. D.J.B.

Coulometric titration. DONALD D. DE FORD AND JAMES N. PITTS, JR. (Research Corp.). U. S. 2,744,061, May 1, 1956.—1. An indirect coulometric titration method comprises forming two streams of a reagent solution from a common source, passing a direct current through the reagent solution between separate electrodes positioned in the two streams on opposite sides of the common source to continuously form an anolyte component in one of the streams and a catholyte component in the other stream, passing one of the streams into an unknown batch solution so that chemical reaction occurs between an electrolyte component of the stream and an ingredient of the unknown solution, determining the end point of the reaction, and determining the total quantity of electricity used to generate the electrolyte component consumed in the reaction. D.J.B.

Manufacture of supported catalysts. FREDRICK J. RIEDL (Universal Oil Products Co.). U. S. 2,739,132, March 20, 1956.—8. The method of preparing a catalyst comprising alumina, halogen, molybdenum sulfide, and cobalt sulfide comprises forming a composite of alumina and halogen, separately mixing permolybdic acid and cobalt nitrate, commingling the resultant mixture with the composite of alumina and halogen, heating the resultant composite to a temperature of about 500° to 1200°F. to convert the acid and nitrate to the oxides, and sulfiding the latter to form a catalyst comprising alumina, combined halogen, molybdenum sulfide, and cobalt sulfide. D.J.B.

Method of sample burning for microchemical combustion analysis. PAUL H. SHERRICK (E. H. Sargent & Co.). U. S. 2,743,995, May 1, 1956. D.J.B

a **Molybdena catalyst.** EUGENE F. SCHWARZENBEK (M. W. Kellogg Co.). U. S. 2,739,133, March 20, 1956.—1. A composition comprises a mixture of a substantially halogen-free component containing a catalytic agent selected from the group consisting of molybdenum and an oxide thereof and a halogen-containing component containing a catalytic agent selected from the group consisting of molybdenum and an oxide thereof. D.J.B

b **Preparation of alkali metal double fluorides of zirconium and hafnium.** EUGENE WAINER (United States of America as represented by the United States Atomic Energy Commission). U. S. 2,743,160 and U. S. 2,743,162, April 24, 1956. D.J.B.

Process of preparing colloidal silica aquasols. LYMAN S. ALLEN (Monsanto Chemical Co.). U. S. 2,741,600, April 10, 1956.—1. A process of preparing stable silica aquasols containing dispersed colloidal silica particles comprises subjecting a thixotropic agglomerate of colloidal silica and water to shear force of sufficient intensity to disperse the thixotropic agglomerate to a stable colloidal solution. D.J.B.

c

Product and process. MAX T. GOEBEL (E. I. du Pont de Nemours & Co.). U. S. 2,739,077, March 20, 1956.—1. A solid of the type described previously ("Chemical process and product," this issue) has chemically bound to the silicon atoms on the surface of the particles at least 50 $—OCH_2(CF_2)_nX$ groups per 100 $m\mu^2$ of surface area of the siliceous material, where X is a member of the group consisting of hydrogen and fluorine and *n* is an integer from 1 to 17. D.J.B.

d

Product and process. EDWARD C. BROGE (E. I. du Pont de Nemours & Co.). U. S. 2,739,078, March 20, 1956.—1. A solid (see previous abstract) has chemically bound to the silicon atoms on the surface of the particles at least 100 —ORO— groups per 100 $m\mu^2$ of surface area of the siliceous material, where R is a bivalent hydrocarbon radical having 2 to 18 carbon atoms in which each of the carbon atoms attached to oxygen is also attached to at least one hydrogen atom. D.J.B.

e

Product and process. RALPH K. ILER (E. I. du Pont de Nemours & Co.). U. S. 2,739,075 and U. S. 2,739,076, March 20, 1956. D.J.B

XIV—General and Historical

Ceramic production and ceramic industry of the Philippine Islands. SCHMIDT-LAMBERG. *Euro-Ceram.*, 6 [3] 78–79 (1956). —Historical and development data. M.Ha.

Ceramic technician survey. R. S. DU FRESNE. *Am. Ceram. Soc. Bull.*, 35 [6] 248 (1956).—Results of the survey confirm the belief that a technician training program is needed and would be beneficial to the industry.

Get me a foreman, quick. A. E. CURRIER. *Am. Ceram. Soc. Bull.*, 35 [6] 232–33 (1956).—Before foremen can be used they must be intelligently selected and trained. The expense of a foreman training program is much less than the cost of inefficient operation.

Research—the key to progress. LORAN S. O'BANNON. *J. Can. Ceram. Soc.*, 24, 7–12 (1955).—Eight ways in which research can help the individual or the company are listed. Advantages of contracting with an independent outside laboratory are stressed. Some of the accomplishments attained in ceramics through research are presented. R.W.C.

Solubility of quartz dust. A. J. BEAL AND A. L. GODBERT. *Ministry Fuel and Power (Brit.), Safety in Mines Research Estab., Research Rept.*, No. 115, 22 pp. (1955); abstracted in *J. Appl. Chem.* (London), 5 [10] ii-475 (1955).—As part of the investigation of the causes of silicosis, the dependence of solubility and rate of dissolution of quartz dust on the following factors was studied: density of dust suspension in solvent (water or dilute NaCl), fineness of the dust within the respirable size range (<5μ), temperature, rate of stirring, pH value of solvent, and concentration of NaCl in solvent. The experimental results suggest that the solvent attacks only the parts of the surface more weakly attached to the body of the quartz particles, the strength of the binding of these parts to the particle having been weakened during grinding and by hydration. The dissolution of quartz dust is therefore regarded as an etching of the surface, confined to local areas, rather than as a general dissolution involving the whole surface. No significant differences in solubility were found between freshly ground quartz dust and the same dust "aged" by prolonged exposure to air. 25 references. V.R.E.

g

Units of weight and measure—definitions and tables of equivalents. L. V. JUDSON. *Natl. Bur. Standards Misc. Publ.*, No. 214 (supersedes No. 121, 1936) 64 pp. (1955). Govt. Printing Office, Washington 25, D. C. 40c.—The units of length, mass, area, volume, and capacity are defined with approved spellings and abbreviations, and tables of interrelations and equivalents in the metric system are given. V.R.E.

h

BOOK

Automatic Factory—A Critical Examination. STEPHEN A. JUNE, JOHN D. BARDIS, LEE H. LURIO, LEONARD S. POLANER, OYSTEIN SAGEDAHL, HERBERT A. SKENAR, AND BERNARD K. YENKIN. Instruments Publishing Co., Pittsburgh 12, Pa. 88 pp. $1.50.

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zone based upon a total regeneration pressure of 1 atm. absolute pressure. D.J.B.

Relieving mechanism for use with analytical balances. GEORGE F. HODSMAN (L. Oertling, Ltd.). U. S. 2,752,146, June 26, 1956. D.J.B.

Uranium products and methods of using. LOUIS SPIEGLER (United States of America as represented by the United States Atomic Energy Commission). U. S. 2,759,789, Aug. 21, 1956.—1. The method of converting uranium peroxide to a water-soluble uranium product comprises reacting the uranium peroxide with an aqueous alkali carbonate solution at a *pH* between 7.6 and 10.5. D.J.B.

XIV—General and Historical

Aluminum on fiber glass protects at high temperatures. ANON. *Ceram. Ind.*, 66 [3] 75–76 (1956); *Am. Ceram. Soc. Bull.*, 35 [9] 367 (1956).—A suit designed to protect the wearer at 1500°F. for several minutes consists of aluminum over fiber glass. With properly selected suits workers can stay 15 to 20 min. in areas having a temperature of 700° to 800°F. Fresh air is supplied by means of artificial "lungs" or oxygen generating equipment. Suits have been successfully used in making hot repairs or cleaning out wrecks in enamel furnaces and whiteware kilns. Workers have stayed up to 4 min. in furnaces at 1400°F. and up to 2 min. in a furnace at 1500°F. Uses in the glass field as well as in enamel and whiteware kilns are pointed out. 2 photos. T.H.E.

Building materials. A. H. THORNELOE AND G. H. WHITING. *Repts Progr. Appl. Chem.*, 39, 62–82 (1954).—A survey is made of progress in building materials, including cement, concrete, clay, and clay products, lime, etc. 384 references. V.R.E.

Cement economy in South Africa. N. STUTTERHEIM AND M. F. KAPLAN. *Natl. Bldg. Research Inst. Bull.* (Pretoria), 1956, No. 14, pp. 1–8.—The present position in the Union of South Africa is briefly outlined, and proposals for overcoming the present shortage are suggested. A possible solution is the increased manufacture and use of alternative materials, such as cements containing blast-furnace slag or fly ash. 1 figure. 17 references. V.R.E.

Ceramic materials. ANON. *Ceram. Ind.*, 66 [1] 83–160 (1956).—Formulas, physical characteristics, properties, and uses of ceramic materials for the production of enamels, glass, and pottery are given. T.H.E.

Ceramics and atomic energy. VICTOR R. PALMERI. *Cerâmica* (São Paulo), 2 [5] 7–9 (1956).—Properties and uses of ceramic materials in atomic energy work are reviewed. 4 photos. V.R.P.

Ceramics in industry—present and future. E. J. SMORE AND J. H. KOENIG. *Ceram. Ind.*, 66 [4] 147–50 (1956).—Industrial applications and properties of ceramics are discussed. 6 figures. T.H.E.

Ceramics and refractories. S. W. RATCLIFFE. *Repts. Progr. Appl. Chem.*, 39, 44–56 (1954).—Progress in ceramics and refractories during 1954 is reviewed, especially (*a*) ceramics for use in jet engines (pure oxides, cermets, carbides, nitrides, metal bonds, graphite, and ceramic coatings) and (*b*) ceramics in atomic energy work (ceramic materials as diluents in reactors, as moderators, and as shields to conserve neutrons). Also reviewed are clays and other raw materials, electronic ceramics, glazes and enamels, refractories, analytical and physical measurements, and firing. 75 references. V.R.E.

Ceramics without vitreous phase. G. BIÉLER. *Chimie & industrie*, 74, 1163–74 (1955); abstracted in *J. Appl. Chem.* (London), 6 [4] i-535 (1956).—Polycrystalline ceramics, with no vitreous phase, are prepared by sintering, i.e., solid-state reaction. The mechanism of agglomeration and recrystallization is discussed. Methods of fabrication, characteristics, and applications of the following types are described: superrefractory oxides, sulfides, carbides, nitrides, borides, silicides, cermets, and insulating, ferromagnetic, and semiconducting ceramics. V.R.E.

Cottage and small scale industries. B. L. MAJUMDER. *Indian Ceramics*, 2 [5] 178–82 (1955).—Activities of the Government of India for developing the cottage and small-scale industries are given chronologically. On the recommendation of the Ford Foundation Team on Small-Scale Industries, the Government has decided to set up regional institutes, a marketing service corporation, and a small scale industries corporation. Manufacturers of scientific glass apparatus, pressed ware (glass), thermal flasks, etc., are included in the approved list of small industries. B.L.M.

Economic advantages of insulating factory buildings. W. S. BRYDON. *Fuel Econ. Rev.*, 1956, pp. 79–82. 2 figures. V.R.E.

Economy in electricity. H. J. GIBSON. *Fuel Econ. Rev.*, 1956, pp. 39–54.—The cost of electricity rarely exceeds 4% of the cost of a finished product, but economies can be effected. 14 figures. V.R.E.

Interrelation of technology and management in modern industry. EDWARD MEIGH. *Atti Congr. Intern. Vetro, 3rd Congr., Venice, 1953*, pp. 150–63.—The need for well-trained technologists and managers in industry is stressed. Problems of integration of the work of scientists and managers are examined, and consideration is given to the application of scientific method to industrial problems (operational research), quality control, work measurement, job evaluation, the scientific selection and training of managers, and the function of development and design in industrial administration. The social responsibility of management toward the consumer and the worker is discussed. 17 references.

Need for research in the ceramic industry. HERBERT J. ROLEB. *Cerâmica* (São Paulo), 2 [5] 2–6 (1956).—R. summarizes the advantages of planned and constant research programs in ceramic plants. V.R.P.

Norwegian Institute [of Silicate Science] has research of interest to ceramists. WILLIAM J. KNAPP. *Am. Ceram. Soc. Bull.*, 35 [9] 362 (1956).

Outline of the pottery industry of Japan. T. N. SHARMA. *Indian Ceramics*, 2 [5] 169–77 (1955).—Tracing the present development of pottery in Japan, S. discusses its national economy, regional distribution, scale of production, operational size of the units, condition of raw materials, fuel, equipment, wages, labor situation, etc., giving statistical information. The pottery industry of Japan comprises mostly small units, 44.8% of the factories employing less than four workers. Each small unit is owned and managed independently but performs only one step in the manufacturing process. 3 figures. B.L.M.

BOOK

Battersea Works 1856–1956. R. BENNETT. Published by Morgan Crucible Co., Ltd., London, 1956. 67 pp., 40 illus.—A record of the development of crucible manufacture in England. A.B.S.