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CERAMIC ABSTRACTS

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s a previous determination of the number of observations and a letermination of whether orientation is present or absent from hem. In the process of working up the measurements, their umber is sometimes considered insufficient and sometimes unecessarily large. Meanwhile, a conclusion as to the presence of rientation is drawn without benefit of theory, and the observaions are terminated. The sequential method would indicate the recise probability relations with a reduction in the requisite numer of observations by a factor of 2. The construction of structure diagrams is carried out rationally with equal interval regions, guaranteeing maximum precision in the construction (a Kavrajkii network). 6 figures, 6 tables, 18 references. D.T.W.

Studies in lithium oxide systems: III, Liquid immiscibility in he system Li_2O–B_2O_3–SiO_2. B. S. R. Sastry and F. A. Hummel. *J. Am. Ceram. Soc.*, 42 [2] 81–88 (1959).—Glasses within the ernary system Li_2O–B_2O_3–SiO_2 containing less than 25.6% Li_2O an be broadly classified into three groups according to their beavior during cooling or heating. One group, containing either nore than 18% Li_2O or less than 20% SiO_2, yields clear glasses luring slow or rapid cooling. The second group, containing approximately 5 to 15% Li_2O and 25 to 90% SiO_2, yields dense white opal glass during slow or rapid cooling. The third group, located at the outer edge of the second group, cools to room temperature as clear glasses but develops opacity when reheated to temperatures between 550° and 880°C. It has been shown by electron microscopy that the opacity is due to liquid immiscibility, the matrix glass containing well-formed spheres of the dispersed phase. Some of the clear glasses of both groups consist of two immiscible phases. The size of the dispersed units in the spontaneous opal glasses and in the reheat opal glasses can be controlled by the variation of the reheat treatment. The phase separation reported here is beyond the resolution of the petrographic microscope and can be detected only with the high resolution of the electron microscope. Accessory evidence is given to show that the phases are noncrystalline. 11 figures, 7 references. For part II see *ibid.*, 41 [3] 88–92 (1958).

Thermal decomposition of dolomite: V, Investigations on the adsorption of thermally decomposed dolomite crystals. R. A. W. Haul and F. A. Raal. *Z. anorg. u. allgem. Chem.*, 281 [3–4] 199–211 (1955).—The adsorption isotherms of argon on dolomite crystals heated previously at 700° to 1100°C. were studied. From these measurements the specific surface area and the distribution and size of the pores were derived; they were compared with the values obtained from the BET, Anderson, and Huttig isotherms. The results show that there is a fundamental change in the structure properties in the temperature range 800° to 1000° C. The magnitude of these changes depends on the rate of heating and determines the properties and the hydration of burned dolomite. 5 figures, 29 references. For part IV see *Ceram. Abstr.*, 1956, April, p. 85*d*. G.B.

X-ray investigation of minerals of the isomorphous series forsterite-fayalite. E. N. Eliseev. *Zapiski Vsesoyuz. Mineral. Obshchestva*, 86 [5] 557–70 (1957).—Olivine is one of the principal rock-forming minerals. The contents of iron and magnesium vary, with accompanying changes in index of refraction and specific gravity. E. deals with changes in the distance between crystal planes, as measured by X ray, due to the replacement of magnesium by iron in olivine; by the new method of analysis the composition of the mineral may be determined. 3 figures, 6 tables, 19 references. D.T.W.

X-ray intensity measurements with counter tubes. W. Parrish. *Philips Tech. Rev.*, 17 [7–8] 206–21 (1955–56).—P. discusses the peculiar problems of quantitative X-ray intensity measurements with counter tubes, with special reference to the various procedures possible with the Norelco diffractometer. The influence of inadequate crystallite orientation in the specimen has been eliminated by spinning the specimen in its own plane. 22 figures, 2 tables, 16 references. J.J.D.

Zeta potentials in relation to rheological properties of oxide slips. P. J. Anderson and P. Murray. *J. Am. Ceram. Soc.*, 42 [2] 70–74 (1959).—The characteristic minimum that occurs in the apparent viscosity-pH curves for oxide slips is explained in terms of the zeta potential of the dispersed oxide. The model adopted also explains other features of the rheological behavior of oxide slips. 6 figures, 13 references.

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Crystal growing system. Carl J. Christensen (United States of America as represented by the Secretary of the Navy). U. S. 2,863,740, Dec. 9, 1958. D.J.B.

See also Sect. XVI, Books.

XV—General

Basic research in industry. T. H. Johnson. *Am. Ceram. Soc. Bull.*, 38 [1] 1–3 (1959).

Brick maker's look at Russia. L. R. Whitaker. *Am. Ceram. Soc. Bull.*, 38 [1] 25–28 (1959). 1 photo.

Dust measurements and dust standards. Rudolf Bommert. *Silikattech.*, 9 [9] 398–400 (1958).—Apparatus for determining the number of dust particles, measuring methods, international standards for the permissible number of dust particles in 1 cc., and classification of dusts are discussed. 4 figures, 1 reference. M.Ha.

New knowledge in combating silicosis in production operations. Artur Brandt. *Silikattech.*, 9 [9] 394–97 (1958).—The distribution of silicosis cases in all industries (East Germany) is given; 32.43% occur in the silicate industry. Data are also given for the time between exposure and diagnosis. Protective measures are discussed, especially for female and juvenile workers. Silicotuberculosis was found in the porcelain industry at a much higher percentage than in all other industries. 1 figure. M.Ha.

Plaster molds and the influence of their properties on the formation of a slip casting. L. Lehmann. *Ber. dent. keram. Ges.*, 35 [9] 273–77 (1958).—The diffusion coefficient of water in a series of plaster of Paris mold materials was measured by observing the rate of upward movement of the saturation boundary in a columnar test piece, the bottom of which was in contact with water. Measurements were made of the casting rates of a typical stoneware body in molds with different plaster/water ratios, mixing and aging times, etc. The casting rate increased as the diffusion coefficient decreased. This unexpected and, at first sight, anomalous result is due to the fact that the more absorbent mold quickly forms a layer of body consisting of the finest particles. This layer has a low water diffusivity and decreases the effective absorbing power of the mold. The presence of this skin on the cast can be demonstrated by measuring the time required for the absorption of a given amount of $KMnO_4$ solution drawn from a pipette. The result emphasizes the practical importance of preparing a plaster mold which has both a high porosity and a low permeability. These properties are achieved by using a high plaster/water ratio, as long a mixing time as possible, and a short aging time before pouring the plaster. The diffusion coefficient of a mold decreases slightly during service due to the chemical attack of the plaster by the slip deflocculant. 10 figures, 7 references, 1 table. J.A.S.

Study of "freezing" of pyrometric cones. Chen Hsen-ku. *Acta Met. Sinica*, 2 [1] 99–106 (1957) (in Chinese); abstracted in *J. Iron Steel Inst.* (London), 190 [3] 318 (1958).—Freezing (not deforming at the softening temperature) is caused by the formation of crystals from molten phases in the cone when the furnace temperature is unsteady or remains for a long time below the softening temperature. In Seger cones 7 to 10 these are cristobalite, and in cones 11 to 16 they may also contain mullite. Freezing can be avoided by reducing the proportion of Na_2O or K_2O; CaO or MgO cannot be substituted for the alkali oxides. V.R.E.

Successful smoke elimination. Harry Davis. *Brit. Clayworker*, 67 [799] 197–99 (1958).—D. discusses the emission of brown and black smoke from coal- and gas-fired kilns. The elimination of smoke in two stoneware and porcelain kilns fired with gas (Diesel) oil is described. A saving of 15% in fuel consumption was also obtained. 4 figures. C.M.C.

Technical dust control in the silicate industry. Rudolf Bommert. *Silikattech.*, 9 [9] 401–406 (1958).—B. gives a general discussion of the danger of dust, arrangement and types of protective equipment, proper working clothes, and ventilation. 14 figures, 8 references. M.Ha.

Work and health protection in the plants of the silicate industry. Eduard Kersten. *Silikattech.*, 9 [9] 388–93 (1958).—Industrial hazards and measures and regulations for their elimination in East Germany are described. 6 photos. M.Ha.