Selected Abstracts from *Yogyo-Kyokai-Shi*

As a service to readers and with the agreement of The Ceramic Society of Japan, selected English language Abstracts of the papers appearing in the *Journal of the Ceramic Society of Japan* (*Yogyo-Kyokai-Shi*) are reproduced here. The selection was made by Drs R. Stevens and P. Popper.

Yogyo-Kyokai-Shi **94** (1986)

The Effect of Al_2O_3 or SiO_2 Addition on the Thermal Shock Resistance of Y_2O_3-Stabilized ZrO_2 Hiroshi WATANABE and Mitsuo CHIGASAKI, *Yogyo-Kyokai-Shi*, **94**, 255-60 (1986)——Thermal shock resistance of ZrO_2-(4-17)% Y_2O_3 has been investigated. A relatively excellent thermal shock resistance is obtained in partially stabilized ZrO_2-7% Y_2O_3. The effect of Al_2O_3 or SiO_2 addition to ZrO_2-7% Y_2O_3 has been also investigated to enhance its thermal shock resistance. ZrO_2-7% Y_2O_3-(0.5-4)% Al_2O_3 indicated an improved thermal shock resistance. In ZrO_2-7% Y_2O_3, the monoclinic ZrO_2 grains tended to coalesce into large clusters in the cubic ZrO_2 matrix. As a result, large cracks are prone to initiate from the monoclinic phase during the martensitic transformation. On the other hand, the addition of Al_2O_3 results in the isolated spherical grains of monoclinic ZrO_2 phase, leading to an improved thermal shock resistance. 4 figs., 1 table, 19 refs. [H. W.]

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Firing Shrinkage of Alumina Green Sheet Shozo OHTOMO, Masatoshi KATO and Kimitake KOREKAWA, *Yogyo-Kyokai-Shi*, **94**, 261-66 (1986)——The alumina Green sheet (96% purity; Remainder 4% consists SiO2, CaO and MgO) produced by doctor blade method is popularly used for the electronic ceramic parts. In this study,

the firing shrinkage behavior of almuina green sheet is discussed quantitatively by the mixing of certain ratio of two types of low soda aluminas selected from three commercial types of low soda aluminas. Higher green density is obtained by the mixing of two types. The green density of tape is predictable from particle size distribution. The linear shrinkage is determined by the dimensional distribution ratio which seems to be determined essentially by the anisotropy of alumina particles in the orientation effects by the tape processing equipment. 13 figs., 3 tables, 9 refs. [S. O.]

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Milling Effects of Starting Hydrated Aluminum Sulfate on $\eta \rightarrow \alpha$ Phase Transformation and Sinterability of Alumina Keiji DAIMON and Etsuro KATO, *Yogyo-Kyokai-Shi*, **94**, 273-80 (1986)——The milling effects of hydrated aluminum sulfate were studied. Dehydration of milled hydrated sulfate produced broken-egg shell-like particles composed of finer anhydrous sulfate particles through melting of the hydrate on heating. The anhydrous sulfate desulfated into aggregate grains of η-Al_2O_3 with irregular pore size distribution, and the transformation temperature from η- to α-phase transformation was lowered about 100°C. It was confirmed that the enhancement of phase transformation was attributed to accelerated nucleation in η-Al_2O_3 grains, and that the sinterability of α-Al_2O_3 was improved by the increase in the density of green compacts, which was caused by occurrence of many cracks in the skeletal grains of α-Al_2O_3. 11 figs, 1 table, 11 refs. [K. D.]

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Measurement of Thermal Diffusivity of Boron Nitride and Sapphire by Laser Flash Method Hiromichi OHTA and Yoshio WASEDA*, *Yogyo-Kyokai-Shi*, **94**, 295-99 (1986)——In order to measure the thermal diffusivity of ceramics at high temperatures, the correlation factor for radiative heat leak has been estimated with respect to normalized temperature decay rate after its maximum. The thermal diffusivity of boron nitride was obtained at temperature between 1073 and 1773 K with