

Effects of Dispersant and Binder Additive Dosage on the Crack Formation in Graphite Green Sheets

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Abstract

Crack formation is one of the biggest defects occurred during drying process of particle dispersion film. Recently aqueous slurries are preferable to slurries with organic solvents since they are environmentally friendly. However, aqueous slurries are also easy to cause crack formation due to relatively large surface tension of water, compared to organic solvents. In addition, it is very difficult to predict crack formation from slurry characterization, thus, the optimal slurry preparation conditions have not been clarified, yet. Therefore, in this paper, the effects of additive dosages of a dispersant (carboxymethylcellulose, denotes CMC) and a binder (styrene-butadiene rubber, denotes SBR) on crack formation in graphite sheets during drying were discussed. Graphite slurries were prepared by changing the additive amounts of CMC and SBR, and filtration, compression and stress relaxation behavior of the slurries were examined^[1]. The prepared slurries were tape cast on a copper plate and crack formation on the sheet was observed as well. It was shown that the stress relaxation rate of the slurry increased with an increase in additive amount of SBR, resulting in the crack-free sheet.

References

- [1] Takamasa Mori, et al., Effects of Slurry Properties on the Crack Formation in Ceramic Green Sheets during Drying, *J. Ceram. Soc. Japan*, 114 (10), 823-828 (2006).