Alumina-silicate/zinc borosilicate glass 복합체의 저온 소결 및 유전 특성

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**Abstract**: The low temperature sintering and the dielectric properties of Al$_2$O$_3$/SiO$_2$-zinc borosilicate glass composites were investigated in the view of the application for LTCC. When the sintering was conducted at 900°C ZnAl$_2$O$_4$ and ZnB$_2$O$_4$ compounds formed at the Al$_2$O$_3$-rich and the SiO$_2$-rich compositions, respectively. The reaction between ZBS glass and Al$_2$O$_3$/SiO$_2$ caused the formation of these compounds. The Al$_2$O$_3$/SiO$_2$ ratio affected the dielectric properties. The excellent dielectric properties, i.e., $Q\times f$ value $= 40,000$ GHz and $\varepsilon=4.5$, were obtained in the Al$_2$O$_3$/SiO$_2$-ZBS glass system and fabricated the LTCC substrate materials.

**Key Words**: Al$_2$O$_3$, SiO$_2$, Zinc-borosilicate glass, Ceramic/glass, LTCC, Microwave dielectrics properties