

## 1-xBiNbO<sub>4</sub>-xZnNb<sub>2</sub>O<sub>6</sub> 세라믹스의 저온소결 및 유전 특성

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### Low-temperature sintering and dielectric properties of the 1-xBiNbO<sub>4</sub>-xZnNb<sub>2</sub>O<sub>6</sub> ceramics

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#### Abstract

Low-temperature sintering and dielectric properties of the 1-xBiNbO<sub>4</sub>-xZnNb<sub>2</sub>O<sub>6</sub> ceramics (x=0.3, 0.5, and 0.7) with 10 wt% zinc borosilicate (ZBS) glass was investigated as a function of the substitution of ZnNb<sub>2</sub>O<sub>6</sub> with a view to applying this system to LTCC technology. The all composition addition of 10 wt% ZBS glass ensured a successful sintering below 900 °C. The the amount of ZnNb<sub>2</sub>O<sub>6</sub> on BiNbO<sub>4</sub> ceramics increased the  $Q \times f$  values, but it decreased the sinterability and dielectric constant due to the higher  $Q \times f$  value and sintering temperature of ZnNb<sub>2</sub>O<sub>6</sub> than that of BiNbO<sub>4</sub> ceramics. The increase of ZnNb<sub>2</sub>O<sub>6</sub> content from 0.3 to 0.7 in the 1-xBiNbO<sub>4</sub>-xZnNb<sub>2</sub>O<sub>6</sub> ceramics with 10 wt% ZBS glass sintered at 900 °C demonstrated 30~20 in the dielectric constant ( $\epsilon_r$ ), 3,500~4,500 GHz in the  $Q \times f$  value.

**Key Words :** 1-xBiNbO<sub>4</sub>-xZnNb<sub>2</sub>O<sub>6</sub>, Zinc borosilicate glass, LTCC, Dielectric property