

(1-x)BiNbO₄-(x)ZnNb₂O₆ 세라믹스의 저온 소결 및 유전 특성

김윤한, 윤상옥, 김 신, 김관수, 김경주, 박종국*
강릉대학교, 강원대학교*

Low-temperature sintering and dielectric properties of the (1-x)BiNbO₄-(x)ZnNb₂O₆ ceramics

Yun-Han Kim, Sang-Ok Yoon, Kwan-Soo Kim, Shin Kim, Kyung-Joo Kim and Jong-Guk Park*
Kangnung Univ., Kangwon Univ.*

Abstract : In this study, the microwave dielectric property variations of (1-x)BiNbO₄-(x)ZnNb₂O₆ composites (x=0.3, 0.5 and 0.7) with 10 wt% zinc borosilicate (ZBS) glass was investigated as a function of the substitution of ZnNb₂O₆ 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. In addition, a small amount of Bi₂SiO₅ as the secondary phase was observed in the all composition. The substitution of ZnNb₂O₆ on the BiNbO₄ composites increased the Q×f values, but it decreased the sinterability and dielectric constant due to the high sintering temperature and low dielectric constant of ZnNb₂O₆ than BiNbO₄ ceramics. The increasing of ZnNb₂O₆ content from 0.3 to 0.7 in the (1-x)BiNbO₄-(x)ZnNb₂O₆ composites with 10 wt% ZBS glass sintered at 900 °C demonstrated 28.1~15.6 in the dielectric constant (ε_r), 5,500~8,700 GHz in the Q×f value.

Key Words : (1-x)BiNbO₄-(x)ZnNb₂O₆, Zinc borosilicate glass, LTCC, Dielectric property