

# **FRACTURE TOUGHNESS OF BaTiO<sub>3</sub> - MgO COMPOSITES SINTERED BY SPARK PLASMA SINTERING**

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## **Abstract**

BaTiO<sub>3</sub>-MgO composites with various compositions were fabricated by using a Spark Plasma Sintering (SPS) method. BaTiO<sub>3</sub>-MgO composites with very high density were successfully sintered by SPS method. From the experimental results of as-sintered composites, Vickers hardness decreased and fracture toughness increased with increasing BaTiO<sub>3</sub> content. The higher fracture toughness of BaTiO<sub>3</sub>-MgO composite with 10 vol% BaTiO<sub>3</sub> content was achieved compared to monolithic MgO. In order to investigate the effect of piezoelectric BaTiO<sub>3</sub> particles dispersed in MgO matrix, fracture toughness of the polarized composites was also evaluated. After polarization, fracture toughness of the BaTiO<sub>3</sub>-MgO composites was improved and higher than that of monolithic MgO, while polarization induced distinct anisotropy in fracture toughness between parallel and perpendicular directions to the poling direction.

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