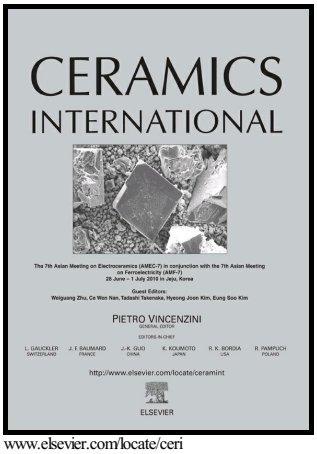

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Effect of rare earth oxides on the microstructure and properties of mullite/hBN composites

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Abstract

Mullite/hBN composites were fabricated with different rare earth oxides additives (ReO: Er_2O_3, CeO_2, La_2O_3, Lu_2O_3) by pressureless sintering at 1600^oC for 4 h. The impacts of ReO on the phase composition, microstructure, mechanical, dielectric and tribological properties of the composites were investigated. XRD results showed that all the ReO additives were beneficial to the formation of mullite phase. With the decrease in the ionic radius of the ReO, the mullite grains of the composite were refined while their mechanical properties were increased. The sample sintered with Lu_2O_3 showed the