Long-term Thermal Durability of $ZrTiO_4$-Al_2TiO_5 Ceramics at 1100°C

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Aluminium titanate is well known as ceramic material with low thermal expansion, low thermal conductivity in comparison to other metal oxides and high thermal shock resistance Unstabilized aluminium titanate tends to decompose fully in the range 800~1300°C.

The thermal durability and also the service life of aluminium titanate ceramics are dependent on the stabilization status and the processing route $ZrTiO_4$-Al_2TiO_5 ceramics were sintered at 1400, 1500 and 1600°C for 2 h to study their thermal stability at the critical decomposition temperature of 1100°C for 100~500 h

The microstructure degradation of the samples, studied with the help of scanning electron microscopy, X-ray micro-analysis, dilatometer and X-ray diffraction, is presented here

특별강연

프로톤 전도성 유기/무기 나노복합체의 합성과 마이크로 연료전지

Synthesis of Proton-conducting Organic/Inorganic Nanocomposites and Micro Fuel Cells

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최근 프로톤교환막형 연료전지(PEMFC)와 직접메탄올형 연료전지(DMFC)가 활발히 연구되고 있으며 이들 연료전지들은 낮은 작동온도, CO_2를 배출하지 않는 특성과 자동차에 대한 적용성 등으로 가장 현실적 차세대에너지원으로서 각광받고 있다 특히 휴대용PC나 PDA등에 적용할 수 있는 소형/마이크로형 연료전지는 실용화에 대한 요구가 산업계에서는 날로 높아져 가고 있다 본 연구에서는 프로톤 전도성 유기/무기 나노복합체의 설계와 합성, 그리고 MEMS기술을 사용한 마이크로연료전지를 소개한다