

### 论文摘要

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## 反应烧结制备多孔 $\text{TiB}_2$ -TiC复相陶瓷

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**摘要:** 通过反应烧结制备 $\text{TiB}_2$ -TiC多孔复合材料。采用XRD和SEM分析该多孔复合材料的相组成和微观结构, 并采用气体透过法测定多孔复合材料的相对透气系数和最大孔径。结果表明: 制备的 $\text{TiB}_2$ -TiC陶瓷复合材料中存在大量的连通孔隙, 随烧结温度的升高, 烧结体的密度增大、抗弯强度增强, 而孔隙度、透气性和最大孔径均逐渐减小; 当烧结温度为1 700 °C时, 所制备的多孔复合材料孔隙度为30.9%, 相对透气系数达到0.7 mm/(Pa·s), 最大孔径达到5 μm。

**关键字:**  $\text{TiB}_2$ -TiC复相陶瓷; 反应烧结; 孔隙度

## Preparation of porous $\text{TiB}_2$ -TiC multiphase ceramics by reactive sintering

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**Abstract:** The reactive sintering was used to synthesize the porous  $\text{TiB}_2$ -TiC multiphase ceramics. The phase composition and microstructure of the porous  $\text{TiB}_2$ -TiC multiphase ceramics were analyzed by XRD and SEM. The gas permeability and maximum aperture of porous ceramics were tested by gas permeation. The results show that a large number of pores exist in the prepared  $\text{TiB}_2$ -TiC multiphase ceramics. With increasing sintering temperature, the density and transverse rupture strength of all the specimens increase, whereas the open porosity, maximum pore size and gas permeability decrease gradually. When the specimens are sintered at 1 700 °C, the open porosity, gas permeability and maximum pore size of the specimens are 30.9%, 0.7 mm/(Pa·s) and 5 μm, respectively.

**Key words:**  $\text{TiB}_2$ -TiC multiphase ceramics; reactive sintering; porosity

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