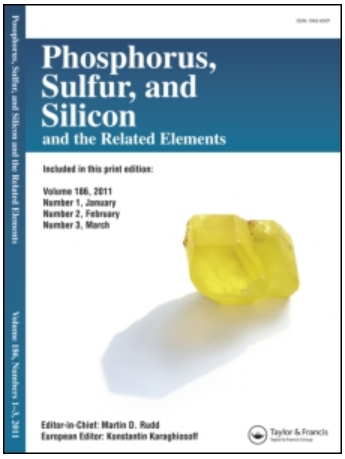

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Machinable Dy 2 O 3 -Containing HAp Ceramics

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MACHINABLE DY_2O_3-CONTAINING HAP CERAMICS

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The machinable ceramics are the ceramics that can be drilled by machine. It has reported before. But they are low strength.[1,2] In our study, Dy_2O_3-containing HAp ceramics were found to be machinable. The mixed powder of Dy_2O_3 and hydroxyapatite ($Ca_{10}(PO_4)_6(OH)_2$, HAp) with molar ratios ((Ca + Dy)/P) from 1.67 (HAp only) to 1.89 were uniaxially dry-pressed at 50 MPa to disks. The test specimens were sintered at 1200–1500°C for 3 h in air. The phases observed mainly by XRD in the sintered body were HAp and Dy_2O_3. The relative density of the test specimens were almost above 95%. Three-point bending strength were 50∼90 Mpa, and fracture toughness were 0.8∼1.7 $MPa{\cdot}m^{0.5}$ of the test specimens sintered at 1250°C. The test specimens presented machinability in the range of molar ratios 1.78–1.89.

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