

**PREPARATION OF MACHINABLE GLASS-CERAMIC BASED
ON β -Ca₂P₂O₇ CRYSTAL**

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Abstract

The new type machinable glass-ceramics based on β -Ca₂P₂O₇ crystal can be prepared successfully by the heat treatment of Na₂O-CaO-B₂O₃-P₂O₅-Al₂O₃-SiO₂ system of glass. An isolated droplet type phase separation takes place prior to crystallization. Three kind of crystals precipitate, AlPO₄(tridymite type), β -Ca₃(PO₄)₂ and β -Ca₂P₂O₇. The amount and size of β -Ca₂P₂O₇ crystal increases with increase in the temperature, particularly above 750°C. The machinability of glass-ceramics was examined by conventional drilling test, and it was found that the glass-ceramics containing a large amount and a large size (> 10 μ m) of β -Ca₂P₂O₇ crystal exhibits a good machinability.

Keywords: CaO-P₂O₅ glass, β -Ca₂P₂O₇ crystal, machinability

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