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Formation mechanism of high apparent porosity ceramics prepared from fly ash cenosphere

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1	Formation mechanism of high apparent porosity ceramics prepared from fly ash
2	cenosphere
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10	Abstract
11	Porous ceramics with high apparent porosity have wide applications in various fields. In
12	this work, high apparent porosity ceramics were fabricated from fly ash cenosphere. Effects
13	of sintering temperature and CaCO ₃ on the apparent porosity were investigated. More
14	importantly, the formation mechanism of high apparent porosity was proposed. Results
15	showed that the sintering temperature decreased the apparent porosity in densification
16	process. The addition of $CaCO_3$ improved the apparent porosity in two ways: one was that
17	CO_2 emission from CaCO ₃ decomposition promoted the formation of pores in ceramics; the
18	other one was that CaO from decomposed CaCO ₃ was transformed into anorthite with fly
19	ash cenosphere, which generated the porous structure of fly ash cenosphere shell. In this
20	work, the apparent porosity of ceramics with 30 wt.% CaCO3 sintered at 1250 °C reached
21	59.25%, and the corresponding compressive strength was 70±2.58 MPa. Results also

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