Scopus

Search

Sources

Alerts

Help 🗸

Lists

SciVal a

Register >

Login v

## Document details



Abstract View references (35)

The effects of MgO addition on properties such as density, firing shrinkage, microstructure, Vickers hardness, and fracture toughness of ZTA-CeO2 ceramics composites were investigated. The amount of CeO2 used in the experiment was fixed at 5.0wt% while the MgO addition was varied from 0wt% to 2.0wt%. Each composition was weighed, mixed, and pressed using hydraulic press under 300MPa into 13mm pellets. The pellets were sintered at 1600°C for 4h under pressureless condition. Vickers hardness and fracture toughness of the sintered samples were measured using the Vickers indentation method. Based on the SEM microstructures, elongated secondary phase, i.e. MgAl<sub>11</sub>CeO<sub>19</sub>, started to occur at 0.5wt% MgO. This elongated phase was responsible for the increase in fracture toughness of the ceramic composites. Similarly, the addition of more than 0.5wt% MgO produced another secondary phase (MgAl<sub>2</sub>O<sub>4</sub>), as detected by XRD. This phase was shown to have low intrinsic fracture toughness. Therefore, the sample with 0.5wt% MgO showed the optimum properties with the highest fracture toughness (9.14MPam) and Vickers hardness (1591HV) values. © 2013 Elsevier B.V.

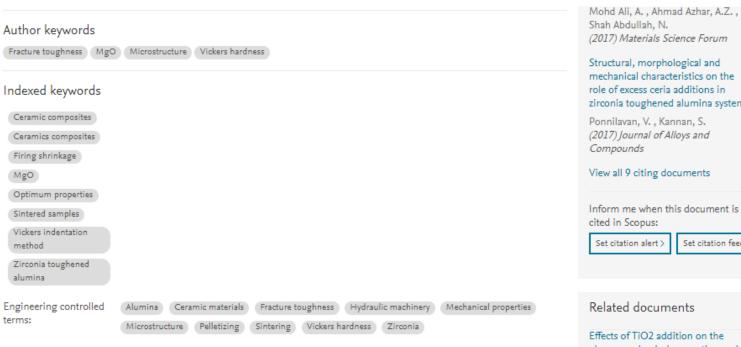
## Metrics ① View all metrics > 9 69 Citations in Scopus 70th Percentile Field-Weighted Citation Impact PlumX Metrics Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

## Cited by 9 documents

Hardness and toughness enhancement of CeO2 addition to ZTA ceramics through HIPping technique

Rejab, N.A., Lee, W.K., Sktani, Z.D.I. (2017) International Journal of Refractory Metals and Hard Materials

Tetragonal and monoclinic phase transformation of ZTA-MgO ceramic cutting tool by machining process



ISSN: 09215093 Source Type: Journal Original language: English

Magnesia

Engineering main

heading:

DOI: 10.1016/j.msea.2013.11.091 Document Type: Article

(2017) Materials Science Forum

mechanical characteristics on the role of excess ceria additions in zirconia toughened alumina systems

Inform me when this document is

Set citation feed >

phase, mechanical properties, and microstructure of zirconiatoughened alumina ceramic composite

Manshor, H., Md Aris, S., Azhar, A.Z.A. (2015) Ceramics International

Effect of Cr2O3 derived from