Contribution ID: **221** Type: **3. Oral presentation**

Cold Sintering of ⍰⍰Alumina using Functionalised Boehmite

A novel cold assisted sintering process using a combination of functionalised boehmite and ⍰–alumina particles is demonstrated. Functionalised boehmite and ⍰-alumina composites were initially densified using a cold sintering process at <300 ⍰C followed by heat-treatment at 1400-1450 oC (~200-300 ⍰C lower than conventionally sintered ⍰-alumina). Highest relative densities (98%) were achieved using meso-scale ⍰-alumina (d50 = 720 nm) in a 50:50 wt% mixture with boehmite, functionalised in 2M acetic acid. The high densities at low temperature were attributed to easy propagation of the transformation to ⍰ phase within the dense boehmite matrix, accompanied by enhanced nucleation on the surface of the alumina particles. Critical aspects of the transformation sequence from functionalised boehmite to ⍰ alumina were characterised using Raman and Fourier Transform InfraRed spectroscopy. Preliminary hardness measurement were comparable with conventional alumina sintered at ~1650 ⍰C.

Professional Status of the Speaker

Interest in submitting a paper in a special issue of

No interest

Invitation letter for visa

Author: REANEY, Ian M. (School of Chemical, Materials and Biological Engineering University of Sheffield Sheffield, UK)

Co-author: GRIMES, C. (School of Chemical, Materials and Biological Engineering University of Sheffield Sheffield, UK)

Presenter: REANEY, Ian M. (School of Chemical, Materials and Biological Engineering University of Sheffield Sheffield, UK)

Session Classification: Field assisted sintering technology/Spark Plasma Sintering FAST/SPS

Track Classification: Group 3: Field assisted sintering technology/Spark Plasma Sintering FAST/SPS