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(54) **PROCESS FOR THE PRODUCTION OF PLASMA SPRAYABLE YTTRIA STABILIZED ZIRCONIA (YSZ) AND PLASMA SPRAYABLE YSZ POWDER PRODUCED THEREBY**

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(52) **U.S. Cl.**
USPC **501/103**; 106/450

(58) **Field of Classification Search**
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See application file for complete search history.

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(57) **ABSTRACT**

Most widely used commercial zirconia powders are composed of porous particles 10-105 μm and 45-75 μm in size. Furthermore, these powders are mixtures of tetragonal, cubic, and monoclinic modifications, which indicate the heterogeneous distribution of the stabilizing yttria dopant in finished powder not suitable for Solid oxide fuel cell applications. Most of the methods reported in the prior art employs an additional agglomeration step which makes the process more expensive and laborious. Present invention provides a simple and economical process for the preparation of plasma grade yttria stabilized zirconia powder useful for applications in solid oxide fuel cells (SOFC) and thermal barrier coatings without the agglomeration step. Plasma grade yttria stabilized zirconia powders of present invention are prepared at different mole % of yttria varying from 3 to 12%. Finished powder has particle size varying between 33-51 μm and flowability of 30-54 seconds per 50 gm of powder having particle morphology ranging from almost spherical to blocky angular shape.

24 Claims, 8 Drawing Sheets

