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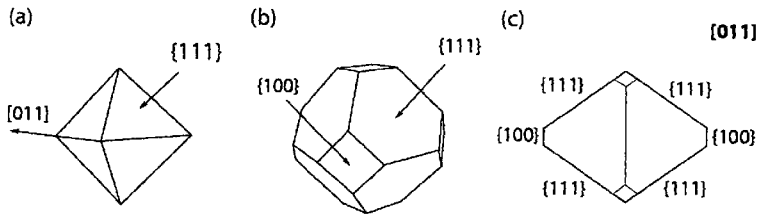
(54) **Title**: DOPED CERIA ABRASIVES WITH CONTROLLED MORPHOLOGY AND PREPARATION THEREOF

Fig. 1



(57) **Abstract**: The present invention relates to doped ceria (CeO2) abrasive particles, having an essentially octahedral morphology. Such abrasives are used in water-based slurries for Chemical Mechanical Polishing (CMP) of subrates such as silicon wafers. The invention more particularly concerns yttrium-doped ceria particles having a specific surface area of 10 to 120 m2/g, characterized in that at least 95 wt%, preferably at least 99 wt%, of the particles are mono-crystalline and in that the particles' surfaces consist of more than 70 %, preferably of more than 80 %, of planes parallel to {111} planes. A novel gas phase process for synthesizing this product is also disclosed, comprising the steps of providing a hot gas stream,- and, introducing into said gas stream a cerium-bearing reactant, a dopant-bearing reactant, and an oxygen-bearing reactant,- the temperature of said gas stream being chosen so as to atomize said reactant, the reactant being selected so as to form, upon cooling, doped ceria particles. Abrasive slurries based on the above ceria offer a low level of induced detectivity in the polished substrate, while ensuring a good removal rate.

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