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(54) **HIGH-YIELD SYNTHESIS OF BROOKITE $TIO_2$ NANOPARTICLES**

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(52) **U.S. Cl.** ..... **423/610**

(58) **Field of Classification Search** ..... 136/243–254; 423/610, 417

See application file for complete search history.

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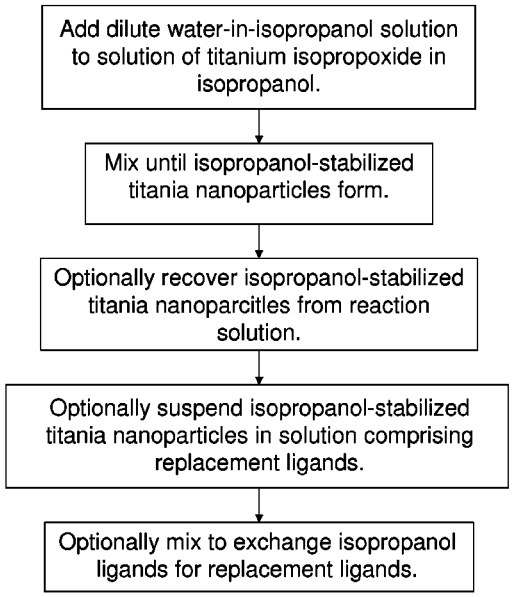
(57) **ABSTRACT**

A method for forming non-agglomerated brookite $TiO_2$ nanoparticles without the use of expensive organic surfactants or high temperature processing. Embodiments of this invention use titanium isopropoxide as the titanium precursor and isopropanol as both the solvent and ligand for ligand-stabilized brookite-phase titania. Isopropanol molecules serve as the ligands interacting with the titania surfaces that stabilize the titania nanoparticles. The isopropanol ligands can be exchanged with other alcohols and other ligands during or after the nanoparticle formation reaction.

**12 Claims, 2 Drawing Sheets**