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[54] **METHODS FOR PREPARING POROUS METAL OXIDES**

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Related U.S. Application Data

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[52] **U.S. Cl.** **423/701**; 423/702; 423/703; 423/704; 423/705; 423/706; 423/707; 423/708; 423/713

[58] **Field of Search** 423/701–708, 423/713

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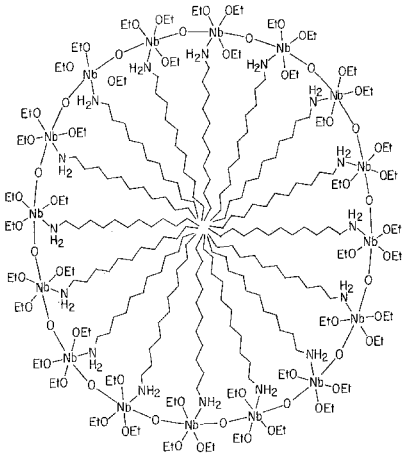
[57] **ABSTRACT**

The present invention relates to a composition and a method for producing hexagonally-packed mesoporous metal oxides wherein the metal oxide is selected from transition metals and lanthanide metals. The composition includes hexagonally packed metal oxide mesostructures that are resistant to pore collapse upon removal of surfactant and are thermally stable. The composition can include a surfactant complexed with the metal. Also described are methods for producing the hexagonally-packed mesoporous metal oxides. The present invention also relates to compositions and methods for producing porous metal oxides. The compositions include microporous and mesoporous metal oxides that are resistant to pore collapse upon removal of surfactant and are thermally stable. Also described are methods for producing microporous metal oxides.

56 Claims, 30 Drawing Sheets