

Mesocrystals (MCs)

Self-assembly SUPERSTRUCTURES Metal Oxide

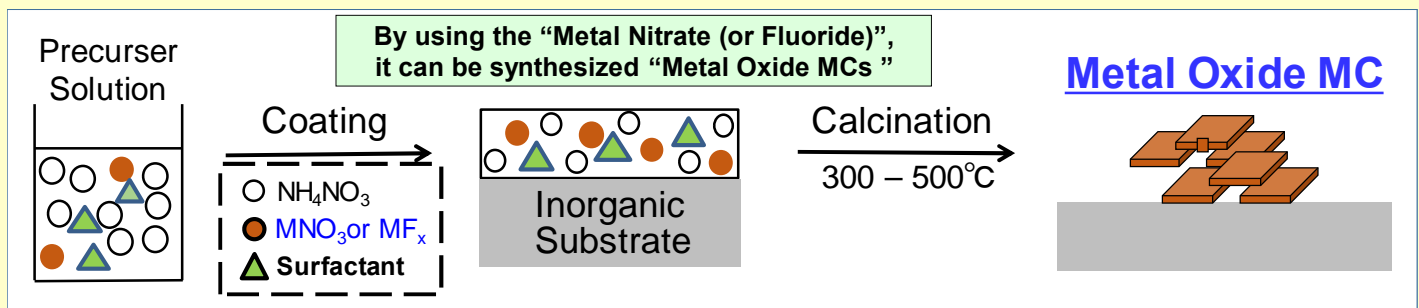
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1. Introduction

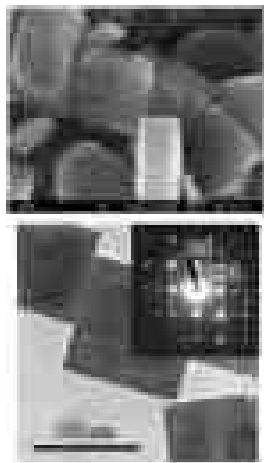
- Mesocrystals (MCs) are a superstructures with a crystallographically ordered alignment of nanoparticles and have some unique characteristics such as high-specific surface area, pore accessibility, good electronic conductivity and thermal stability.
- MCs are also an ideal platform for constructing functional materials that can solve a various tasks. The development of Metal Oxide MCs opens up exciting new opportunities for constructing much more efficient devices.

2. Newly Invented "Facile and General" MCs' Fabrication Method

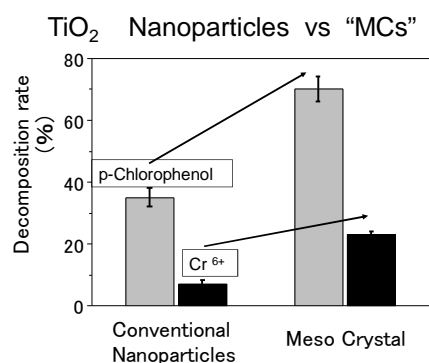
- The novel manufacturing method can synthesize Metal Oxide MCs facile and in a general way by utilizing topotactic structural transformation.



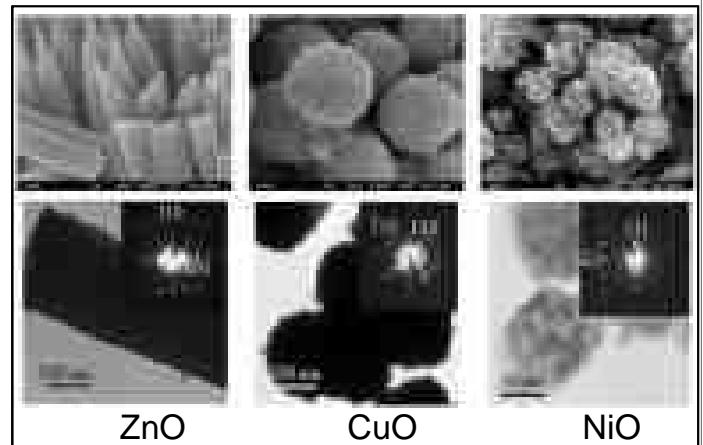
3. Characteristics of Metal Oxide MCs



TiO_2



The photodecomposition capability of TiO_2 "MC" has been greatly improved due to its large surface area ($\geq 65\text{m}^2/\text{g}$) and its aligned [001] surface.



The variety of Metal Oxide MCs have been already produced.

4. Prospective Applications

- Catalysis
- Sensing

- Electrode
- Surface coating material

5. Patent Licensing Available

Patent No.: WO2014/119117 (US2016/001268, JP, CN)

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