

Technology Offer

Porous Metal Oxide Films

Ref.No. 09068

Background

Thin porous metal oxide films offer unique physical, electrical and magnetic properties with applications in various fields including catalysis, gas sensing and separation, power storage and generation as well as biology and medicine. Currently known synthesis techniques for metal oxide films with templated porosity (e.g. dip-coating, spin-coating) show significant limitations when they are faced with large substrates and/or substrates with a micro-structured surface.

Technology

We offer an improved method for the production of porous metal oxide films on a substrate using template assisted electrostatic spray deposition (ESD). It overcomes all known problems of current technologies like dip- and spin coating. This novel method is able to produce unisized mesoporous and macroporous films by directly controlling the size and concentration of the pore forming organic templates in an initially formed precursor solution.

Benefits

- ▶ Hierarchically structured meso- and macroporous film
- ▶ Control of pore morphology (volume, size, distribution, connectivity)
- ▶ Pores can be coated with catalytic active material
- ▶ Various substrates can be used
- ▶ Coating of large substrate
- ▶ Easy transfer to industrial applications
- ▶ Production under room conditions

Application

- ▶ Catalysis, Sensors (gas sensors), (Dye sensitized) solar cells, Templates, Displays

Industry

- ▶ Chemistry, Photovoltaic, Electronic, Optoelectronic

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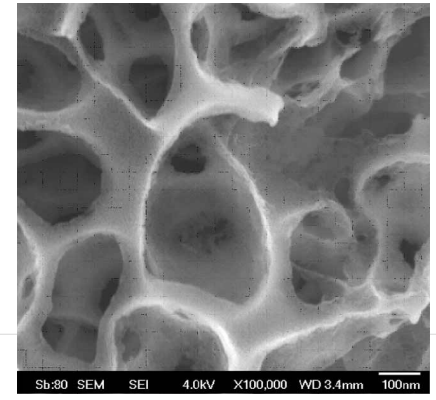


Figure: SEM image of a porous TiO₂ network (Sokolov, Paul, Krähnert. 2009)

Keywords

Porous, Pore, Metal oxide, Catalyst

Development Stage

Product

IP Rights

PCT Application with priority on October 2009

Patent Owner

Technische Universität Berlin, Germany

Contact

Jeanne Trommer
Licensing Manager

Phone +49 30 2125-4831
Fax +49 30 2125-4822
Mobil +49 173 6226 905

jeanne.trommer@ipal.de