Experimental and Numerical Investigation of Second-Generation, Controlled-Diffusion, Compressor Blades in Cascade

Jun 1997 90 pages

Authors: Darren V. Grove; NAVAL POSTGRADUATE SCHOOL MONTEREY CA

... Reynolds number of 640,000. Rake probe survey's were performed upstream and downstream of the blades in order to obtain spanwise total pressure profiles. Surface flow visualization was performed on the blades using a titanium dioxide and kerosene mixture. Blade surface pressure measurements were obtained using a 40-hole instrumented blade from which coefficients of pressure were calculated. A standard optics, two-component, laser-Doppler velocimeter was used ...

Design and Test of a Half Reflector Impulse Radiating Antenna with Feed-Point Lens

Jun 1998 43 pages

Authors: W. S. Bigelow; Everett G. Farr; FARR RESEARCH ALBUQUERQUE NM

... while moving the inner feed conductor off axis. A scale-model HIRA was built to confirm the theory and design. Complex permittivity measurements were performed on the lens material. Finally, a full-size HIRA with a 24 cm diameter titanium dioxide/epoxy lens feeding a 1.83 m diameter reflector with F/D of 114 was built. The step response was an impulse with full width half maximum of 70 Ps. The measured aperture height of the antenna was 0.36 m ...

Photoreductions in Aqueous Semiconductor Suspensions and Properties of Modified Polyacrylonitrile Films

Dec 14, 1998 78 pages

Authors: Robert L. Calhoun Jr; AUBURN UNIV AL

Particles of the semiconductor titanium dioxide have been shown to heterogeneously catalyze the destruction of chlorofluorocarbons (CFCs) in both air saturated and degassed aqueous suspensions. The photoreduction of CFC-11 or R-11 (CCl3F) in this manner was studied over a range of initial R-11 concentrations, and UV light intensities. Kinetic determinations of the reduction progress were performed via ion-selective electrodes. The reduction takes place via radical chain mechanism which is eventually slowed by product poisoning of the catalyst. ...

Power and Efficiency Advancements for Low Rate - Long Endurance Semi-Fuel-Cells

Sep 30, 2002 22 pages

Authors: Russell R. Bessette; MASSACHUSETTS UNIV NORTH DARTMOUTH

The characterization and use of a palladium and iridium catalyst combination on several cathode substrates (carbon paper, porous nickel, titanium dioxide, carbon fibers) are described. The Pd/Ir combination outperforms palladium alone or iridium alone on all of the substrates as determined by catalyst deposit stability, polarization curve Tafel slope and onset potential. Scanning electron microscopy (SEM), energy dispersive spectrometry (EDS), and transmission electron microscope (mM) were used to ...

New Hybrid Route to Biomimetic Synthesis

Mar 21, 2003 76 pages

Authors: Daniel E. Morse; CALIFORNIA UNIV REGENTS SANTA BARBARA OFFICE OF RESEARCH

... . We discovered that the silicateins - proteins we originally discovered responsible for the structure-directing catalysis of polymerization to form silica and silsesquioxanes - also can be used for the structure-directing polymerization of titanium dioxide from the appropriate water-stable alkoxide precursor. This result dramatically extends our initial development of the new field we called "Silicon Biotechnology" to an even broader "Functional Inorganic ...

Investigations of Crystalline Organic Nanostructures Grown by Ultra-High Vacuum and Vapor Phase Techniques

Sep 1999 4 pages

Authors: Stephen Forrest; PRINCETON UNIV NJ OFFICE OF RESEARCH AND PROJECT ADMINISTRATION

... to the point that we can now routinely achieve the alignment of DAST thin films across entire wafer surfaces. The material is excellent for optical modulators. We are currently investigating a modulator design which employs titanium dioxide waveguides coated with oriented DAST films. The wave propagating in the waveguide is evanescently coupled into the organic film which can be used to shift the phase of the wave by application (through electrodes) of an ...

http://www.stormingmedia.us/search.php?q=Titanium+Dioxide&search_x=8&search_y=7... 6/1/2012
Toward an Active Fabric-Based Air Decontamination System  
Authors: G. A. Gaddy; Matthew S. Batchler; G. Mills; S. Huang; B. L. Slater; J. Debotoli; ARMY RESEARCH LAB ADELPHI MD  
Heterogeneous semi-conductor photocatalysis of chloroform (CHCl3) has been demonstrated on titanium dioxide (TiO2) particles that were grafted on cotton fabric and on TiO2 particles that were embedded in glass fabric. Modified TiO2 particles were grafted onto cotton fabric and irradiated in the presence of CHCl3 vapor. The synthesis of the system is described and FTIR results of the decomposition of CHCl3 are discussed. TiO2 particles were also embedded in glass fabric and irradiated in the presence ...  
Full Text

Self-Disinfection and Decontaminating Interior Surfaces Based on Photocatalytic Titania/Easy-Release Coatings  
Authors: Robert E. Baier; Christopher M. Izzo; Paul J. Nicolaera; STATE UNIV OF NEW YORK AT BUFFALO DEPT OF BIOCHEMISTRY  
We have demonstrated that easy-release qualities imparted by thin methyl-terminated silane coatings, when combined with catalytic disinfection by titania dioxide particles embedded in or superficially attached to duct-fiber glass surfaces and coated fiberglass-based architectural fabrics, can improve the sanitary performance of HVAC air-handling systems. This project evaluated the application of such coatings/particles to duct-wall fiberglass surfaces and coated fibrous glass compositions. The surface ...  
Full Text

Effect of Nanoparticles on Complement System in Cell Culture Model  
Authors: Dariusz T. Sladowski; MEDICAL UNIV OF WARSAW (POLAND)  
...Quiidel Corporation San Diego California, Different sizes of nanoparticles such as silver (Ag; 151,000 nm) molybdenum (Mo3; 30 150 nm), aluminium (Al; 30 103 nm), iron oxide (Fe3O4; 30 47 nm) and titanium dioxide (TiO2-40nm) were evaluated for their complement activation potential. The complement activation properties of relatively larger particles of cadmium oxide (CdO; 1 micrometer) manganese oxide (MnO2; 1-2 micrometers), and tungsten (W; 27 micrometers) were assessed, ...  
Full Text

Biomimetic Approach to Solar Cells Based on TiO2 Nanotubes  
Authors: Jan L. Allen; Ivan C. Lee; Jeff Wolfenstine; ARMY RESEARCH LAB ADELPHI MD SENSORS AND ELECTRON DEVICES DIRECTORATE  
The goal of this research was to explore the use of nanotube titanium dioxide (TiO2) as an electrode material in dye-sensitized solar cells in order to further the development of solar cell technology. TiO2 nanotubes were successfully synthesized by hydrothermal methods, working solar cells were constructed, and comparisons were made between nanospherical TiO2 and nanotubular TiO2. The results showed an increase in the maximum photocurrent density, Jsc, at the expense of a lowered fill factor that led to a lowered cell ...  
Full Text

Optimization of PZT Thin Film Crystalline Orientation Through Optimization of TiO2/PT Templates  
Authors: Daniel M Potrepka; Glen R Fox; Ronald G Polcawich; ARMY RESEARCH LAB ADELPHI MD SENSORS AND ELECTRON DEVICES DIRECTORATE  
Titanium dioxide (TiO2) seed/adhesion layers were produced by sputter depositing 15-45-nm thick Ti films on thermally grown silicon oxide (SiO2) using a range of deposition conditions including deposition time, cathode power, and argon (Ar) gas pressure gas flow. The Ti films were oxidized and converted to the rutile TiO2 phase by annealing in a tube furnace and were characterized by X-ray diffraction and ellipsometry. A 100-nm platinum (Pt) electrode layer was then sputter-deposited at 500 deg C onto the TiO2 seed layer. The Pt [111] orientation templates from the underlying [100] ...  
Full Text

MOSFET Replacement Devices for Energy-Efficient Digital Integrated Circuits  
Authors: Hei Kam; CALIFORNIA UNIV BERKELEY DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE  
...relatively high on-state resistance can be tolerated while extremely high endurance is a necessity, hard contacting electrode materials and operation with low contact force are preferred for reliable circuit operation. Using this contact design approach, a reliable relay technology that employs titanium dioxide (TiO2) coated tungsten (W) electrodes is developed for digital logic applications.  
Full Text

Preparation of Water-Displacing Paint.  
Authors: Charles R. Hegedus; DEPARTMENT OF THE NAVY WASHINGTON DC  
...proportional amounts and a binder of silicone alkyl resin is completely dissolved therein. A small quantity of a titanate coupling agent is blended into the solution and milled along with selected amounts of pigments, including titanium dioxide and zinc molybdate, to a predetermined Hegman grind range. Thereafter, respective amounts
of an anti-settling agent, preferably an extremely pure fumed silica, and a low molecular weight petroleum sulfonate are added and...

Polyurethane Self-Priming Topcoats
Apr 16, 1993
23 pages
Authors: Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng; DEPARTMENT OF THE NAVY WASHINGTON DC
A corrosion-resistant coating which can be applied directly to a surface as a self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of an alkaline earth metal metaborate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains from 5 - 40 parts by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
Sep 29, 1992
24 pages
Authors: Charles Hegedus, Donald Hirst, Anthony Eng; DEPARTMENT OF THE NAVY WASHINGTON DC
A corrosion-resistant coating which can be applied directly to a surface as a self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of an alkaline earth metal metaborate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains from 5 - 40 parts by weight of a titania pigment, up to about 3.0 parts by weight of an oil soluble dispersant and up to about 50 parts by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
Aug 25, 1992
26 pages
Authors: Charles Hegedus, Donald J. Hirst, Anthony T. Eng; DEPARTMENT OF THE NAVY WASHINGTON DC
A corrosion-resistant coating which can be applied directly to a surface as a self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of a molybdate-modified zinc phosphate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains from 5-40 parts by weight of a titania pigment, up to about 3.0 parts by weight of an oil soluble dispersant agent and up to about 50 parts by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
May 14, 1993
26 pages
Authors: Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng; DEPARTMENT OF THE NAVY WASHINGTON DC
A corrosion-resistant coating which can be applied directly to a surface as a self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of an alkaline earth metal metaborate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains up to about 35 parts by weight of a titania pigment, up to about 3.0 parts by weight of an oil soluble dispersant agent and up to about 50 parts by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
Mar 1, 1994
7 pages
Authors: Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng; NAVAL AIR WARFARE CENTER AIRCRAFT DIV PATUXENT RIVER MD
A corrosion-resistant coating which can be applied directly to a surface as a self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of an alkaline earth metal metaborate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains up to about 5-40 parts by weight of a titania pigment, up to about 3.0 parts by weight of an oil soluble dispersant and up to about 50 parts by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
Jun 23, 1992
7 pages
Authors: Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng; NAVAL AIR WARFARE CENTER AIRCRAFT DIV PATUXENT RIVER MD
A corrosion-resistant coating which can be applied directly to a surface as self-priming topcoat comprising from about 10 to 90 percent by weight of a polymeric polyurethane binder and 5 to 65 percent by weight of a combination of metal salts or pigments which consist essentially of calcium borosilicate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating may contain up to about 30 percent by weight of a titania pigment and up to about 75 percent by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
Aug 17, 1993
7 pages
Authors: Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng; NAVAL AIR WARFARE CENTER AIRCRAFT DIV PATUXENT RIVER MD
A corrosion-resistant coating which can be applied directly to a surface as self-priming topcoat comprising a polyurethane binder and a combination of pigments consisting essentially of an alkaline earth metal phosphosilicate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains up to about 3.0 parts by weight of an oil soluble surface active agent and up to about 50 parts by weight of at least one organic solvent.

Polyurethane Self-Priming Topcoats
Mar 1, 1994
8 pages
Authors: Charles R. Hegedus, Donald J. Hirst, Anthony T. Eng; DEPARTMENT OF THE NAVY WASHINGTON DC
A corrosion-resistant coating which can be applied directly to a surface as a self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of an alkaline earth metal metaborate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains up to about 3.0 parts by weight of an oil soluble dispersant and up to about 50 parts by weight of at least one organic solvent.

http://www.stormingmedia.us/search.php?q=Titanium+Dioxide&search_x=8&search_y=7... 6/1/2012
A corrosion-resistant coating which can be applied directly to a surface as self-priming topcoat comprising a polyurethane resin binder and a combination of pigments consisting essentially of a molybdate-modified zinc phosphate, zinc salts of benzoic acids, and an alkaline earth metal phosphate such as zinc-barium phosphate. In addition, the coating contains up to about 35 parts by weight of a titanium dioxide pigment, up to about 3.0 parts by weight of an oil soluble dispersant agent and up to about 50 parts by weight of at least one organic solvent.

**Solvothermal Synthesis Of Electrochemically Active Nanocrystalline Li-Ti-O Spinel**

Authors: Dina Pattakhova; Petr Král; Valery Petrovkin. CZECHEOSLOVAK ACADEMY OF SCIENCES PRAGUE J HEYROVSKY INST OF PHYSICAL CHEMISTRY AND ELECTROCHEMISTRY

... of TiO2 with lithium hydroxide in water and ethanol. The hydrothermal reaction proceeds at temperatures higher than 130 deg C. The reaction proceeds via dissolution-precipitation mechanism and its course is not sensitive to the titanium dioxide polymorph used in the reaction. Product of the reaction in water has cubic rock salt type structure. It converts, however, to spinel if annealed to temperatures exceeding 250 deg C. The re-crystallization is ...
The Study of Single-Pass GMA Welds with Different Cover Gas Compositions on HSLA-100 Steel

Authors: Ricky A. Seravia; NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Sep 23, 1993 73 pages

Reducing Film Thickness in Lead Zirconate Titanate Thin Film Capacitors

Authors: Vikram Rao; Ronald G. Polcawich; ARMY RESEARCH LAB ADELPHI MD SENSORS AND ELECTRON DEVICES DIRECTORATE

Dec 2007 24 pages

Metal-Insulator-Metal Diode Process Development for Energy Harvesting Applications

Authors: Matthew Chin; Stephen Kilpatrick; Richard Osgood; ARMY RESEARCH LAB ADELPHI MD SENSORS AND ELECTRON DEVICES DIRECTORATE

Apr 2010 30 pages