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Wettability and Reaction Kinetics in Metal Matrix Composites Aug 1993 59 pages

Authors: Glen R. Edwards; David L. Olson; COLORADO SCHOOL OF MINES GOLDEN CENTER FOR WELDING AND JOINING RESEARCH

Full Text

Research accomplishment during the last academic year are in two related areas: (a) further applications of the thermodynamic model developed in the previous years, and (b) kinetic studies in alumina/reactive metal systems. The ongoing projects are adaptations of the research findings from the previous years, aimed at improving the wettability at an **aluminum**/alumina interface and understanding the nature of the **oxide** barrier formed at the ceramic/liquid **aluminum** interface.

Evaluation of Surface Preparation and Application Parameters for Arc- Sprayed Metal Coatings Apr 1999 108 pages

Authors: Alfred D. Beitelman; CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Full Text

The U.S. Army Corps of Engineers uses an 85:15 zinc:**aluminum** alloy coating on hydraulic structures exposed to severe environments, such as those areas on a ... Inc., investigated the effects of surface preparation and application parameters on the performance characteristics of 85:15 zinc: **aluminum** alloy versus four other materials used for metal coating (metallizing) of Corps structures. ... of surface preparation and application parameters on adhesion, cavitation, and erosion, and porosity and **oxide** content were investigated, and a statistical analysis of the results was performed. Based upon the ...

An Evaluation of Application and Surface Preparation Parameters for Thermal Spray Coatings Aug 1999 332 pages

Authors: Dominic J. Varcalle Jr.; Alfred D. Beitelman; CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Full Text

The U.S. Army Corps of Engineers uses thermal sprayed zinc and **aluminum** coatings on hydraulic structures exposed to severe impact and abrasion damage caused by ice and ... An experimental study of the twin wire electric arc (TWEA) spraying of zinc and **aluminum** coatings was conducted to demonstrate the suitability of this technology for Army applications. Experiments on six materials ... tests, and optical metallography. Coating properties were quantified with respect to roughness, hardness, porosity, **oxide** content, bond strength, and microstructure. Coating performance was evaluated and quantified with ...

Studies of Surface Deactivation of Vibrationally-Excited Homonuclear Molecules in Gaseous Discharge Media Using Coherent Anti-Stokes Raman Spectroscopy (CARS) Jan 1999 61 pages

Authors: Perry P. Yaney; John W. Parish; DAYTON UNIV OH

Full Text

Deactivation coefficients, Gamma(v), of vibrationally-excited on alloys of **aluminum**, stainless steel alloys, a titanium alloy, gold, Pyrex glass and Teflon were determined from measurements of ... titanium to approximately unity for the AMS 312 stainless steel alloy. The low value for titanium can be attributed to the **oxide** layer. The observed values for gold decreased with increasing temperature consistent with a physical adsorption process. For ... k(v) was proportional to v, or nearly so. Moreover, Gamma(v) values for neat Pyrex, gold foil and **aluminum** showed similar proportional dependencies on v.

Low Temperature Polysilicon Thin Film Transistors in Advanced Display Technologies Sep 2000 125 pages

Authors: Miliadis K. Hatalis; LEHIGH UNIV BETHLEHEM PA

Full Text

... registers that run at clock frequencies as high as 20 MHz. Finally, several processing issues that were investigated in order to improve the performance of AMOLED displays are described. This includes work on low temperature silicides for TFTs, a novel hillock-free **aluminum** metallization, and the ability of this **aluminum** metallization to form ohmic contacts to indium tin **oxide**.

Evaluation of Surface Preparation and Application Parameters for Arc- Sprayed Metal Coatings Jul 2001 105 pages

Authors: Alfred D. Beitelman; William Corbett; ENGINEER RESEARCH AND DEVELOPMENT CENTER CHAMPAIGN IL CONSTRUCTION ENGINEERING RESEARCH LAB

Full Text

The U.S. Army Corps of Engineers uses an 85:15 zinc:**aluminum** alloy coating on hydraulic structures exposed to severe environments, such as those areas on a ... , Inc. investigated the effects of surface preparation and application parameters on the performance characteristics of 85:15 zinc:**aluminum** alloy versus four other materials used for metal coating (metallizing) of Corps structures. ... of surface preparation and application parameters on adhesion, cavitation, and erosion, and porosity and **oxide** content were investigated, and a statistical analysis of the results was performed. Based upon the ...

An Evaluation of Application and Surface Preparation Parameters for Thermal Spray Coatings Nov 2001 313 pages

Authors: Dominic J. Varcalle Jr.; Alfred D. Beitelman; ENGINEER RESEARCH AND DEVELOPMENT CENTER CHAMPAIGN IL CONSTRUCTION ENGINEERING RESEARCH LAB

Full Text

The U.S. Army Corps of Engineers uses thermal-sprayed zinc and **aluminum** coatings on hydraulic structures exposed to severe impact and abrasion damage caused by ice ... . An experimental study of the twin-wire electric arc (TWEA) spraying of zinc and **aluminum** coatings was conducted to demonstrate the suitability of this technology for Army applications. Experiments on six materials ... tests, and optical metallography. Coating properties were quantified with respect to roughness, hardness, porosity, **oxide** content, bond strength, and microstructure. Coating performance was evaluated and quantified with ...

Optical Measurements of Air Plasma May 5, 2008 28 pages

Authors: Robert J. Vidmar; NEVADA UNIV BOARD OF REGENTS RENO OFFICE OF SPONSORED RESEARCH

Full Text

... optical diagnostics. The electron beam originates in a pulsed 100 keV 20-mA source and propagated through a 1/2 - mil **aluminum** transmission window into a 400-liter test cell. Plasma production in air was investigated over the pressure range ... , resulted in preliminary results using laser-diode absorption spectroscopy to detect water vapor, carbon dioxide, and nitrous **oxide**. A transmission window and sensor to monitor the beam current was refined from a system that used a 1-mil **aluminum** foil to one with a 1/2-mil foil, which has greatly increased the beam current propagating through the foil into ...

HARBOR SCREENING TESTS OF MARINE BORER INHIBITORS - III. May 16, 1961 44 pages

Authors: H. Hochman; T. Roe Jr; NAVAL CIVIL ENGINEERING LAB PORT HUENEME CA

Full Text

... into wood test panels, creosote, coal tar, 70-30 creosote-coal tar solution, tributyltin coconut fatty acid salt, and tributyltin **oxide**, in general, give protection against Martesia and teredine (Teredo) attack but not against Limnoria. Inorganic copper and mercury compounds, ... protectAGAINST Limnoria attack only. Resistance to Limnoria attack, without adversely affecting resistance to Martesia and Teredo, is increased by the addition to creosote of **aluminum**, copper, or manganese oxinates, and dieldrin, phenylmercuric chloride, or phenylmercuric oleate; by the addition to coal tar of copper ...

BERYLLIUM EROSION CORROSION INVESTIGATION FOR SOLID ROCKET NOZZLES Nov 1966 385 pages

Authors: W. L. Smallwood; H. L. Moody; J. K. Hall; R. D. Hackett; J. G. Baetz; PHILCO-FORD CORP NEWPORT BEACH CA AERONUTRONIC DIV

Full Text

... edge grain pyrolytic graphite. Carbon cloth and asbestos phenolics were used as aft closure, nose cap and entrance cone insulation. Three beryllium formulations and one **aluminum** analog (one test) were used. Pressure, thrust, and thermocouple data are included. Nozzle throat thermal histories and convective heat transfer coefficients were calculated. **Oxide** deposition effects provided extensive thermal insulation and corrosion protection of the nozzle contour. Throat corrosion occurred on only 7 tests. The key grains produced two ...

PRODUCTION DEVELOPMENT OF A SILICON PLANAR EPITAXIAL TRANSISTOR WITH A MAXIMUM OPERATING FAILURE RATE OF 0.001% PER 1000 HOURS AT A CONFIDENCE LEVEL OF 90% AT 25 DEGREES C, Jul 1, 1963 47 pages

Authors: MOTOROLA INC PHOENIX ARIZ

Full Text

... were made in the surface preparation and epitaxial starting material processes. However, work was done on the die bonding and welding processes and these improvements are presented. The most significant changes involve a switch from gold to **aluminum** metalization. Another major process improvement involves the conversion of the base diffusion from boron **oxide** to a boron trichloride process. (Author)

Translucent Oxides. Sep 13, 1963 42 pages

Authors: W. J. Gardner; J. D. McClelland; J. H. Richardson; AEROSPACE CORP EL SEGUNDO CA

Full Text

Pure **oxide** powders of **aluminum**, beryllium, and magnesium were formed into dense translucent compact bodies by hot pressing. The densities of the bodies were found to be more than 98 percent of the theoretical for the MgO, and more than 99.5 percent for the Al2O3 and the BeO. Thermal expansion was measured with a Leitz dilatometer. The data are in agreement with previous published values. Thermal conductivity, modulus of rupture, elastic properties, Young's modulus, shear modulus, dielectric constants, and transmission spectra measurements also are presented. (Author)

Preparation of Metal-Oxide-Hydroxide Protective Layers under Controlled pO2-pH2O-T Conditions. Jan 25, 1973 15 pages

Authors: Frank Dachille; E. W. White; Rustum Roy; PENNSYLVANIA STATE UNIV UNIVERSITY PARK MATERIALS RESEARCH LAB

The report briefly summarizes research on work concerned with the preparation of oxidation films on metals under various pO2, pH2O, and temperature conditions and the characterization of these films. The thrust of the

Full Text

research was to seek out conditions which would lead to the formation of corrosion resistant **oxide** or hydroxide films. The metals considered for study was narrowed down to **aluminum** and iron, along with titanium, nickel and chromium. The principal method for characterization of the corrosion 'films' are soft x-ray spectroscopy, and x-ray diffraction.

Laser Damage in Materials Mar 1974 17 pages

Authors: Albert Feldman; Deane Horowitz; Roy M. Waxler; NATIONAL BUREAU OF STANDARDS WASHINGTON DC INST FOR MATERIALS RESEARCH

Full Text

... self-focusing in materials used in Q-switch solid-state laser systems. In borosilicate crown glass, fused silica, dense flint glass, and yttrium **aluminum** garnet, self- focusing appears to be the main cause of damage. An analysis of damage threshold measurements with linearly polarized radiation and ... phosphate, damage at the lowest levels is caused by inclusions. Bulk and surface damage thresholds in nd:doped thoria:yttrium **oxide** ceramic are obtained relative to bulk damage thresholds in several optical materials. Relationships under different geometric boundary conditions are also derived for ...

HALOGEN PASSIVATION STUDIES Jan 1967 136 pages

Authors: W. A. Cannon; W. D. English; S. K. Asunmaa; S. M. Toy; N. A. Tiner; DOUGLAS AIRCRAFT CO INC NEWPORT BEACH CA ASTROPOWER LAB

Full Text

... the composition of passive films formed, and the deleterious effect of atmospheric moisture on passive surfaces Fluorination reactions reach completion on stainless steel, nickel and **aluminum** alloy surfaces very rapidly. The surface films formed range from 5 to 20 A in thickness and grow at the expense of the **oxide** films. The apparent film thickness on copper and Monel surfaces continues to increase slowly over an extended period of time. Exposure of passive films to ...

A Catalog of Optical Extinction Data for Various Aerosols/Smokes Jun 1976 83 pages

Authors: Merrill Milham; EDGEWOOD ARSENAL ABERDEEN PROVING GROUND MD

Full Text

Extinction spectra in the 3- to 5-, 8- to 13-, and 0.4 to 2.4- micrometer spectral region have been obtained for FS (Chlorosulfonic acid + Free SO3), red phosphorus, HC (Zinc **oxide**, **Aluminum**, Hexachloroethane), and fog oil smokes. A limited number of theoretical predictions based on Mie theory are also presented and compared with the experimental results. The experimental and computational procedures are described in some detail. These findings are subject to revision; the final report will be published later.

Storage Reliability of Chip and Bond Wire Electronic Devices. Volume I. Data Analysis. Dec 8, 1975 96 pages

Authors: BOEING AEROSPACE CO HUNTSVILLE AL ARMY SYSTEMS DIV

Full Text

...) devices, which have been in storage since mid-1967 (eight years). Three parts failed as a result of the eight years of storage. Analysis of the failed parts showed all three were caused by **oxide** defects which allowed the deposited **aluminum** metalization to contact the active silicon of the die and short to ground. The 90% confidence level values for Failure Rate and Mean Time Between Failure are 9.5 x 10 to the -9th power failures/part-hr and ...

Silicon Oxynitride Stability Feb 1987 56 pages

Authors: Paul G. McMullin; John W. Dzimianski; Jin S. Kim; WESTINGHOUSE DEFENSE AND ELECTRONICS CENTER BALTIMORE MD ADVANCED TECHNOLOGY DIV

Full Text

... physical characteristics and important parameters affecting stability or electrical properties. Two types of silicon oxynitride test structures were fabricated. The first type consisted of various size **aluminum** dot capacitors. The second type provided insulated gate filed effect transistor with a series of different channel lengths and a group of test capacitors with ... with silicon oxynitride gate dielectric. It was concluded from the study that the intrinsic breakdown strength of the nitrided silicon dioxide was about 10 percent greater than that of the thin gate **oxide** prior to nitridation.

Proceedings of the Conference on the Environmental Chemistry of Hydrazine Fuels (3rd) Held in Panama City Beach, Florida on 15-17 September 1987 Jan 1988 321 pages

Authors: Daniel A. Stone; Floyd L. Wiseman; HAZARDOUS MATERIALS TECHNICAL CENTER ROCKVILLE MD

Full Text

... state does not react with oxygen at atmospheric conditions, but does not react with commonly occurring pollutants, such as ozone, nitrogen oxides, and sulfur oxides. Hydrazine can be oxidized by certain metals and metal oxides, including **aluminum** and cupric **oxide**. Keywords: Hydrazine fuels, Gas phase kinetics, Models, Soil studies, Matrix isolation studies, Disposal studies, Detection, Monitoring, Toxicology. (MJM)

Acoustic Studies of New Materials: Quasicrystals, Low-Loss Glasses, and High Tc Superconductors Dec 18, 1991 33 pages

Authors: Julian D. Maynard; PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF PHYSICS

Full Text

... development and application of new techniques in acoustics. The goals are: (a) to study the properties of single crystal high temperature superconductor **oxide** materials with ultrasonic measurements; (b) to study the properties of quasicrystals using ultrasound and acoustic analog systems; and (c) to develop and apply a ... very small samples (a few hundred microns in size), the use of the apparatus to study high temperature superconductor material and **aluminum** alloy quasicrystals, and the development and test of a new technique for measuring optical absorption with more than an order of magnitude ...

X-Ray Photoelectron Spectroscopy Study on the Double Layer at an Al2O3- Al Jan 1992 13 pages

Interface

Authors: David E. Ramaker; Hideo Sambe; GEORGE WASHINGTON UNIV WASHINGTON DC DEPT OF CHEMISTRY

Full Text

Upon oxidation of a clean Al **Aluminum** surface, and electrical double layer (EDL) is formed at the aluminum-aluminum **oxide** interface. This EDL is investigated using X-ray Photoelectron Spectroscopy data available in the literature. The EDL strength, measured as a potential difference across the EDL, depends on the Al surface and the oxidation process. The polarity of the EDL is however invariably the same: the Al2o3 side of the Al-Al203 interface is always positively charged. The reduction of the Al work function upon oxidation is attributed to this EDL. the asymmetry ...

Simple Adsorbates on Transition Metal Surfaces; A Chemical and Theoretical Approach Feb 26, 1992 21 pages

Authors: Roald Hoffmann; CORNELL UNIV ITHACA NY

Full Text

... band structures the electron shifts and bond-forming processes critical for surface reactions. The most important applications of our methodology have been to oxidation reactions, desulfurization catalysts, the chemisorption and reactions of hydrocarbons on surfaces, the deposition of **aluminum**, the reactivity of metal **oxide** surfaces and to some corrosion inhibitors and liquid crystal molecules interacting with surfaces.

The Pyro-Metallurgical, Physical, and Mechanical Behavior of Weldments Aug 1992 22 pages

Authors: R. H. Frost; D. L. Olson; COLORADO SCHOOL OF MINES GOLDEN CENTER FOR WELDING AND JOINING RESEARCH

Full Text

The physical and chemical behavior of welding consumables were investigated in studies of the titanium and zirconium as grain refining nucleants in **aluminum** alloys, and studies of the influence of titanium, zirconium and boron additions on **oxide** inclusion formation and on the nucleation of acicular ferrite in microalloyed steel weld metal. The influence of electrochemical reactions during arc welding on weld metal composition was investigated for ...

Low Temperature Deposition and Characterization of N- and P-Type Silicon Carbide Thin Films and Associated Ohmic and Schottky Contacts Dec 1993 50 pages

Authors: R. F. Davis; R. J. Nemanich; M. C. Benjamin; S. Kern; L. M. Porter; NORTH CAROLINA STATE UNIV AT RALEIGH

Full Text

... AlN films on SiC wafers and layers. Etching with a solution of 1:1:10HF:H2: ethanol and a hydrogen plasma sharply reduced both the **oxide** and the C surface concentrations as determined by AES and XPS spectra. Controlled growth of both Beta-SiC and alpha (6H)-SiC films have been ... The reaction zone contained Ti5Si3 and TiC. The electrical properties changed little as a function of heat treatment. alpha (6H)-SiC, Beta-SiC, **Aluminum** nitride, Thin films, Plasma etching, Surface reconstruction, defects, Schottky contacts, Molecular beam epitaxy, X-ray photoelectron spectroscopy, Auger spectroscopy, ...

Health Effects of Hexachloroethane (HC) Smoke Feb 8, 1994 60 pages

Authors: James C. Eaton; Richard J. LoPinto; Winifred G. Palmer; ARMY BIOMEDICAL RESEARCH AND DEVELOPMENT LAB FORT DETRICK MD

Full Text

... used to produce HC smoke. Soldier exposure to HC smoke and worker exposure to the volatile components of HC smoke munitions are reviewed. HC smoke is produced by the combustion of a mixture of hexachloroethane (HCE), zinc **oxide** and **aluminum**. The major component of the smoke is zinc chloride. There are also several chlorinated organic compound in the smoke, some of which are documented potential human carcinogens. Exposure of unprotected soldiers to high concentrations ...

A Comparison of Thin Film Sulfuric Acid Anodizing and Chromic Acid Anodizing Processes Apr 25, 1995 40 pages

Authors: Stephen M. Cohen; Stephen J. Spadafora; NAVAL AIR WARFARE CENTER AIRCRAFT DIV WARMINSTER PA AIR VEHICLE AND CREW SYST EMS TECHNOLOGY DEPT

Full Text

Chromic acid anodizing (CAA), a common **aluminum** pretreatment, forms a thick **oxide** film which provides protection against environmental degradation.

Optical and Photonic Applications of Electroactive and Conducting Polymers Mar 1996 9 pages

Authors: Y. Z. Wang; D. D. Gebler; J. W. Blatchford; S. W. Jessen; L.-b. Lin; OHIO STATE UNIV COLUMBUS DEPT OF CHEMISTRY

Full Text

Symmetrically configured AC light emitting (SCALE) devices based on conjugated polymers utilizing indium tin **oxide** (ITO) and **aluminum** as electrodes have been demonstrated recently. Here we report the fabrication of SCALE devices using a more stable high work function metal, such as gold, as a charge (both electron and hole) injection electrode. Also, a variation of such devices in which the electroluminescent polymer, instead of being separated from the insulating polymer, is dispersed in the insulating polymer to ...

Structure-Property Behavior of Organic-Inorganic Hybrid Materials Based on Sol Gel Chemistry Dec 6, 1996 95 pages

Authors: Garth L. Wilkes; VIRGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG DEPT OF CHEMICAL ENGINEER ING

Full Text

... principal example being amino propyltrimethoxysilane. It has been demonstrated that the coatings display very good abrasion resistance for polymeric substrates, **aluminum** and copper but do not perform as well on steel or a phosphate coated steel. The final portion of ... porous inorganics made by the calcination of hybrid organic-inorganic network materials but where these networks were prepared by the use of functionalized polytetramethylene **oxide** oligomers of varied molecular weight that had been reacted with tetraethylorthosilicate

(TEOS). It was demonstrated that calcination of these materials ...

Organo-Aluminate Polymeric Materials as Advanced Erosion/Corrosion Resistant Thin Film Coatings Mar 19, 1996 32 pages

Authors: Ronald L. Cook; Andrew R. Barron; James O. Stoffer; Harlan Anderson; TDA RESEARCH INC WHEAT RIDGE CO

Full Text

... alumoxane-epoxy, alumoxane-urethane and phosphonato-alumoxane precursors that can be used to prepare durable alumoxane based coatings. In this quarters work we have also begun to evaluate alumoxane-epoxy and alumoxane-urethane resins as coatings on **aluminum** substrates. In addition, cerium/molybdenum exchanged alumoxanes were prepared as precursors for the preparation of corrosion resistant **oxide** barrier coatings.

Characterization of Newly Developed Conductive Composites Mar 1984 34 pages

Authors: L. J. Buckley; I. Shaffer; R. Trabocco; NAVAL AIR DEVELOPMENT CENTER WARMINSTER PA AIRCRAFT AND CREW SYSTEMS TECHNOLO GY DIRECTORATE

Full Text

... composites consisting of various thermoplastics filled with conductive chopped fibers have been studied. The thermoplastics chosen were polyphenylene sulfide (PPS), polyetherimide (PEI), polyphenylene **oxide** (PPO), polyamide (Nylon), polycarbonate (PC), and liquid crystalline polyester (LCP). The chopped fibers included graphite (Gr), stainless steel (SS), **aluminum** flake (Al Fl), and nickel coated graphite (NiGr). Drop weight impact and tensile properties were determined. The effect of fiber loading and type ...

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Measurement of Heterogeneous Deactivation of Vibrationally Excited Homonuclear Molecules at Solid Surfaces Jan 29, 1999 59 pages

Authors: John W. Parish; Perry P. Yaney; DAYTON UNIV OH DEPT OF PHYSICS

Full Text

Deactivation coefficients, gamma(v), of vibrationally-excited N2X(1) sigmag(+),v on alloys of **aluminum**, stainless steel alloys, a titanium alloy, gold, Pyrex glass and Teflon were determined from measurements of the wall relaxation rate coefficients for the ... -4) for the AMS 4943D alloy of titanium to approximately unity for the AMS 312 stainless steel alloy. The low value for titanium can be attributed to the **oxide** layer. The variation of k(v) with v was linear or nearly linear in all cases with slopes lower in most cases than the rate of increase of the vibrational-translational exchange ...

Investigations of Novel Surface Modification Techniques for Wear Resistant Al and Mg Based Materials 1994 22 pages

Authors: Victor Lyubimov; TULA STATE TECHNICAL UNIV (RUSSIA) ELECTROPHYSICAL AND ELECTROCHEMICAL LAB

Full Text

This report results from a contract tasking Tula State Technical University as follows: Investigate the development of **oxide**/silicide wear resistant coatings produced by microarc discharge oxidation (MDO) on the surface of **aluminum** and magnesium based alloys.

Beowulf Cluster for Computational Corrosion and Catalysis Studies Aug 11, 2002 3 pages

Authors: Andrew M. Rappe; PENNSYLVANIA UNIV PHILADELPHIA DEPT OFCHEMISTRY

Full Text

... and complex portions of our current contact with AFOSR. The DURIP funding has now provided our personnel with the computational capability to examine the corrosion of **aluminum** alloys, to understand the role of stress fields in materials and in the multi-scale modeling of fatigue and fracture, and to study reactivity on patterned surfaces including superlattice, nanoparticles, and piezoelectric **oxide** supported metal. To perform this research, we will use ab-initio density functional theory (DFT), which gives quantitative results by detailed modeling of ...

Nanocomposite Diamond and Nitride Films on Structural Materials May 28, 2001 3 pages

Authors: Henry W. White; CURATORS OF THE UNIV OF MISSOURI COLUMBIA

Full Text

... . 1) A laser absorption wave deposition (LAWD) was constructed to deposit diamond and diamond like films and nitride based films on steel, **aluminum** and other substrates from flowing methane/hydrogen mixtures. A pulsed infraredYAG laser was used to create simultaneously two plasmas-from the flowing gas mixture ... a template layer between the Fe-based substrate and the diamond-like film. 3) A pulsed UV krypton-ion laser deposition system was constructed for growth of structured **oxide** films. ZnO films were grown on various substrates. A method for p-type doping of ZnO films was developed for use in ...

Transport and Storage of Metals in Fractured and Karstic Rock Aquifers Mar 31, 2003 123 pages

Authors: William B. White; PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF GEOSCIENCES

Full Text

... movement of metals in karst aquifers, including metal accumulation, release, and transport under low flow and storm conditions. Metals investigated include **aluminum**, arsenic, chromium, lead, and nickel. Measurements were made of variations in metal concentration from base flow to storm flow using three ... coincident with the peak of the storm hydrograph. Trace metals are stored in the spring sediments mainly bound onto iron or manganese **oxide** coatings on the silicate grains. Appendixes contain the following research papers by Dorothy J. Vesper and William B. White: "Storm Pulse Chemographs of ...

Fundamental Understanding of Propellant/Nozzle Interaction for Rocket Nozzle Erosion Minimization Under Very High Pressure Conditions Aug 31, 2005 108 pages

Authors: Kenneth K. Kuo; Kenneth Brezinsky; Sathyanaraya Hanagud; Stephan Irle; Joseph H. Koo; M. C. Lin; Suresh Menon; John Morral; Jamal Musaev; PENNSYLVANIA STATE UNIV UNIVERSITY PARK

Full Text

... diagrams of the W-O-C-H-Cl systems have been obtained to acquire insight into tungsten reaction mechanisms with gaseous mixtures at high-pressure conditions. From equilibrium calculations, tungsten-based nozzles are suitable for aluminized propellants since tungsten **oxide** and tungsten oxychloride formation are significantly reduced due to the strong affinity of oxygen for **aluminum**.

The SPADES Ship Production and Control (SPAC) Module Jun 1978 45 pages

Authors: Filippo Cali; NAVAL SURFACE WARFARE CENTER CARDEROCK DIV BETHESDA MD

Full Text

... the burning machine. I feel that the use of this feature is justifiable at the present only when using the burning machine for cutting templates from light gauge sheet metal or **aluminum**, since this operation will represent only a small percentage of the total work load. Total use of it will probably have to wait until better marking systems are available, although some shipyards with surplus N/C cutting capability might find it desirable, even with today's hardware. The zinc **oxide** marker is probably the best tool to use at the present for this purpose.

Electronic Properties and Device Applications of III-V Compound Semiconductor Native Oxides Mar 2, 2006 67 pages

Authors: Douglas C. Hall; Patrick J. Fay; Thomas H. Kosel; Bruce A. Bunker; Russell D. Dupuis; NOTRE DAME UNIV IN DEPT OF ELECTRICAL ENGINEERING

Full Text

Notre Dame has demonstrated the first gallium arsenide (GaAs)-based metal-oxide-semiconductor field-effect-transistor (MOSFET) utilizing a native **oxide** gate dielectric which has excellent microwave frequency performance and, due to its low gate leakage, promises both low-power operation and potential for superior power amplifier devices. We have shown that the wet-thermal native oxides of the compound semiconductor indium **aluminum** phosphide (InAlP) can be scaled to thicknesses required for devices (10- 20 nm) and still maintain their excellent electrical insulating properties ...

Investigation of Non-Conventional Bio-Derived Fuels for Hybrid Rocket Motors Aug 2007 144 pages

Authors: Scott G. Putnam; AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Full Text

... geometry and overcomes the main weakness of traditional hybrid rocket motor propellants, which are low regression rates. Beeswax was also tested with nitrous **oxide** as an oxidizer, but further testing is needed to attain high enough combustion chamber pressures to achieve stable combustion. Experimental evaluation of the specific ... performance of non-conventional hybrid rocket motors This analysis indicates beeswax, lard, a mixture of paraffin and lard, and combinations of beeswax and **aluminum** should all perform better than traditional hybrid rocket propellants considered when burned with oxygen.

Fabrication and Characterization of Schottky Diodes using Single Wall Carbon Nanotubes Nov 30, 1999 16 pages

Authors: Brandon E Luquette; Barbara M Nichols; ARMY RESEARCH LAB ADELPHI MD SENSORS AND ELECTRON DEVICES DIRECTORATE

Full Text

Schottky diodes using single wall carbon nanotubes (SWNTs) were fabricated using palladium and **aluminum** source and drain contacts, respectively. SWNTs were grown on high resistivity silicon substrates with a thermal **oxide** layer using chemical vapor deposition and ferric nitrate catalyst. Multiple cleanroom processing steps were used to make the diodes which included the deposition of marker layers, oxygen plasma etch for selective nanotube ...

Durable Hybrid Coatings Annual Performance Report (2009) Oct 2009 132 pages

Authors: Vsevolod Balbyshev; Bret J Chisholm; Douglas L Schulz; Gregory J McCarthy; Larry R Pederson; Dante Battocchi; Kerry Allahar; Gordon P Bierwagen; NORTH DAKOTA STATE UNIV FARGO DEPT OF POLYMERS AND COATINGS

Full Text

... for Mg-based primers was developed that includes silica nanoparticles, which has been shown to provide excellent corrosion resistance to important **aluminum** alloys. Research continued to develop a rapid-cure Mg-rich primer system that would minimize out-of-service time when an aircraft is repainted. ... ambient-cured siloxane networks with a UV-curable cross-linked network. Progress was made in developing in-field methods to deposit transparent conducting **oxide** coatings on aircraft canopies by atmospheric pressure plasma methods. Such coatings are needed to dissipate static charge buildup on ...

Total Results: **242** Pages: Previous 1 2 3 4 **[5]** Next Results per page: 50