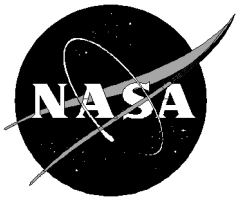
NASA/SP—2007-7039/SUPPL68
October 2007

NASA PATENT ABSTRACTS BIBLIOGRAPHY

A CONTINUING BIBLIOGRAPHY



National Aeronautics and
Space Administration
Langley Research Center
**Scientific and Technical
Information Program Office**

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- TECHNICAL PUBLICATION. Reports of completed research or a major significant phase of research that present the results of NASA Programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA counterpart of peer-reviewed formal professional papers but has less stringent limitations on manuscript length and extent of graphic presentations.

- TECHNICAL MEMORANDUM. Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.

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  7115 Standard Drive
  Hanover, MD 21076-1320

Introduction

Several thousand inventions result each year from research supported by the National Aeronautics and Space Administration. NASA seeks patent protection on inventions to which it has title if the invention has important use in government programs or significant commercial potential. These inventions cover a broad range of technologies and include many that have useful and valuable commercial application.

NASA inventions best serve the interests of the United States when their benefits are available to the public. In many instances, the granting of nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of this objective. This bibliography is published as a service to companies, firms, and individuals seeking new, licensable products for the commercial market.

The NASA *Patent Abstracts Bibliography* is an annual NASA publication containing comprehensive abstracts of NASA-owned inventions covered by U.S. patents. The citations included were originally published in NASA's *Scientific and Technical Aerospace Reports (STAR)*.

The citations published in this issue cover the period October 2006 through September 2007. The subjects covered include the *NASA Scope and Subject Category Guide's* 10 broad subject divisions separated further into 76 specific categories. However, not all categories contain citations during the date range of this issue; therefore, the Table of Contents does not include all divisions and categories. Each citation includes an abstract and, when available, a key illustration taken from the patent or application for patent. Also when available, citations include a link to the full-text document online.

Patent Availability

Information on obtaining copies of NASA patents

Licenses for Commercial Use

Information on obtaining a license to use a NASA patented invention

NASA Patent Counsels

Addresses for the NASA center patent counsels having knowledge of inventions

Patent Licensing Regulations

Information about the policies and procedures for licensing federally owned inventions in the custody of the National Aeronautics and Space Administration. Regulations on the licensing of government owned inventions are available at: http://www.access.gpo.gov/nara/cfr/waisidx_02/37cfr404_02.html.

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Table of Contents

Subject Divisions/Categories

Document citations are grouped by division and then by category, according to the *NASA Scope and Coverage Category Guide.*

Aeronautics

Astronautics

Chemistry and Materials

Engineering

Geosciences

Life Sciences

Mathematical and Computer Sciences

Physics

Social and Information Sciences

Indexes

Two indexes are available. You may use the find command under the tools menu while viewing the PDF file for direct match searching on any text string. You may also select either of the two indexes provided for linking to the corresponding document citation from *NASA Thesaurus* terms and personal author names.

NASA PATENT ABSTRACTS BIBLIOGRAPHY

A Continuing Bibliography (Suppl. 68)

OCTOBER 2007

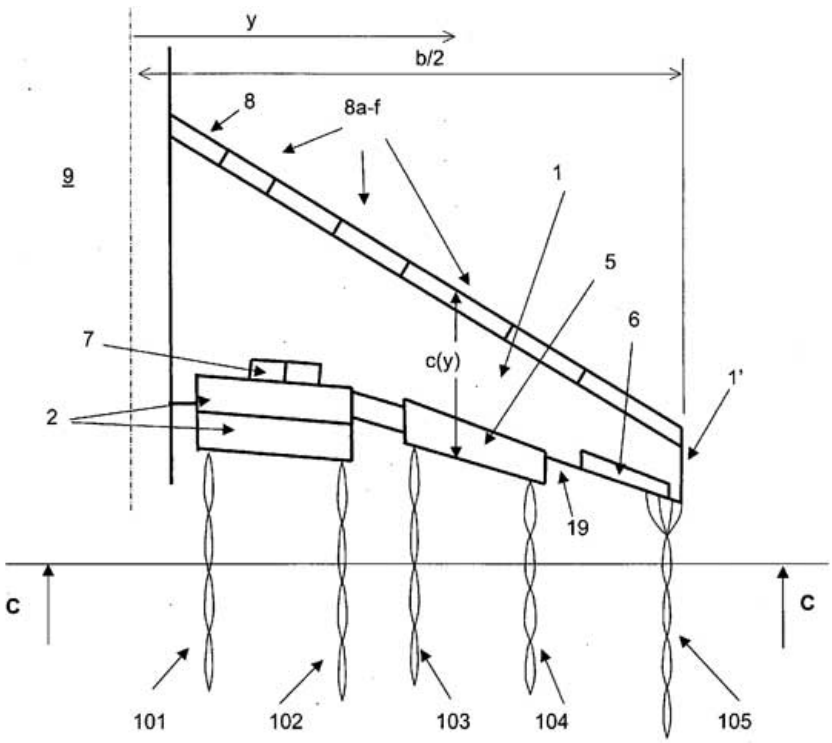
02
AERODYNAMICS

Includes aerodynamics of flight vehicles, test bodies, airframe components and combinations, wings, and control surfaces. Also includes aerodynamics of rotors, stators, fans, and other elements of turbomachinery. For related information see also 34 Fluid Mechanics and Thermodynamics.

20070016649 NASA Langley Research Center, Hampton, VA USA
Trailing Vortex Management via Boundary Layer Separation Control
Greenblatt, D., Inventor; May 19, 2005; 31 pp.; In English
Patent Info.: Filed 8 Jul. 2004; US-Patent-Appl-SN-10-890-842
Report No.(s): PB2007-100940; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070016649

A method and device utilizes boundary layer separation control for the purpose of wake vortex alleviation. Trailing vortices are manipulated by varying the spanwise vortex-sheet strength via either passive or active boundary layer separation control. Boundary layer separation can be diminished or promoted to vary vortex properties, such as locations and strengths, so as to generate wake signatures that are unstable, resulting in complex three-dimensional interaction and rapid destruction of vortex coherence in the wake. Separation control can be achieved in either a time-dependent or a time-invariant mode. Author

Boundary Layer Separation; Vortex Alleviation; Vortex Sheets; Vortex Flaps



03
AIR TRANSPORTATION AND SAFETY

Includes passenger and cargo air transport operations; airport ground operations; flight safety and hazards; and aircraft accidents. Systems and hardware specific to ground operations of aircraft and to airport construction are covered in 09 Research and Support Facilities (Air). Air traffic control is covered in 04 Aircraft Communications and Navigation. For related information see also 16 Space Transportation and Safety and 85 Technology Utilization and Surface Transportation.

20070023633 NASA Ames Research Center, Moffett Field, CA, USA

Information Display System for Atypical Flight Phase

Statler, Irving C., Inventor; Ferryman, Thomas A., Inventor; Amidan, Brett G., Inventor; Whitney, Paul D., Inventor; White, Amanda M., Inventor; Willse, Alan R., Inventor; Cooley, Scott K., Inventor; Jay, Joseph Griffith, Inventor; Lawrence, Robert E., Inventor; Mosbrucker, Chris J., Inventor; Rosenthal, Loren J., Inventor; Lynch, Robert E., Inventor; Chidester, Thomas R., Inventor; Prothero, Gary L., Inventor; Andrei, Adi, Inventor; Romanowski, Timothy P., Inventor; Robin, Daniel E., Inventor; Prothero, Jason W., Inventor; April 17, 2007; 22 pp.; In English; Original contains black and white illustrations

Contract(s)/Grant(s): NAS2-99091

Patent Info.: Filed 13 Aug. 2004; US-Patent-7,206,674; US-Patent-Appl-SN-923156; US-Patent-Appl-SN-957376;

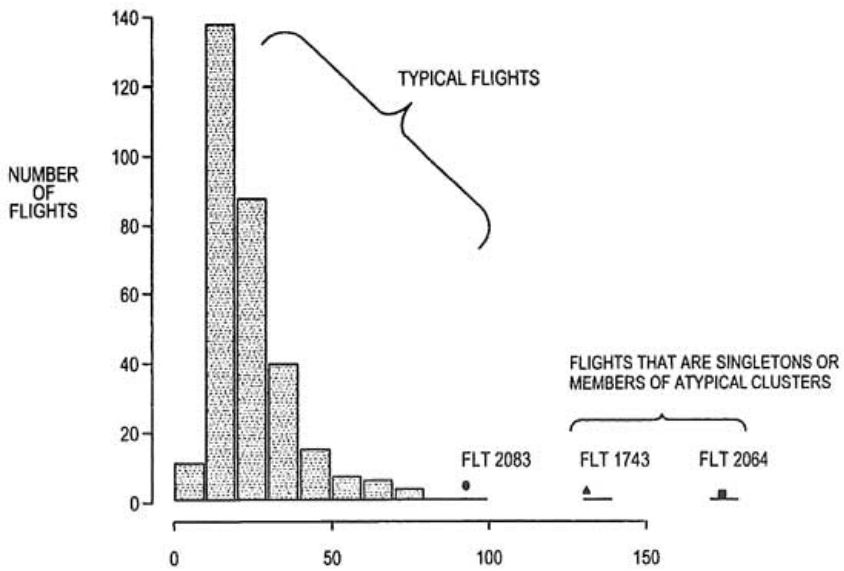
NASA-Case-ARC-15041-2; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023633

Method and system for displaying information on one or more aircraft flights, where at least one flight is determined to have at least one atypical flight phase according to specified criteria. A flight parameter trace for an atypical phase is displayed and compared graphically with a group of traces, for the corresponding flight phase and corresponding flight parameter, for flights that do not manifest atypicality in that phase.

Official Gazette of the U.S. Patent and Trademark Office

Display Devices; Air Transportation; Data Processing; Flight Operations; Civil Aviation; Information Systems



20070023634 NASA Ames Research Center, Moffett Field, CA, USA

Historical Analysis of Aircraft Flight Parameters

Lynch, Robert E., Inventor; Lawrence, Robert E., Inventor; Chidester, Thomas R., Inventor; Amidan, Brett G., Inventor; Prothero, Gary L., Inventor; Romanowski, Timothy P., Inventor; 9 Jan. 2007; 13 pp.; In English; Original contains black and white illustrations

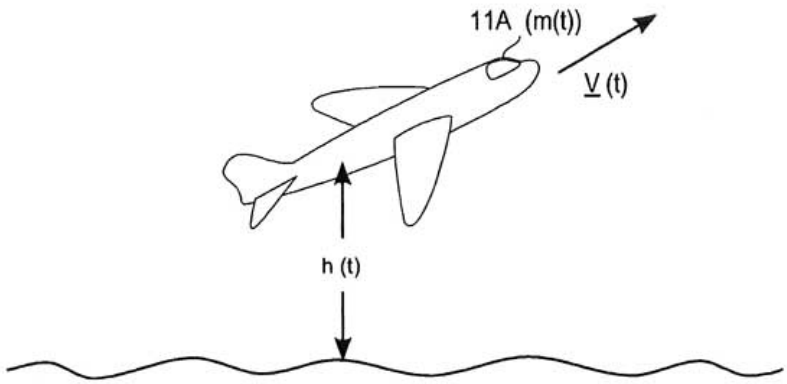
Patent Info.: Filed 22 Feb. 2005; US-Patent-7,161,501; US-Patent-Appl-11/066650; US-Patent-Appl-10/956523;

NASA-Case-ARC-15356-2; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023634

Method and system for analyzing and displaying one or more present flight parameter values (FP(t) of an aircraft in

motion at a measurement time t(sub n), and for comparing the present flight parameter value with a selected percentage band, containing historical flight parameter data for similar conditions.
Official Gazette of the U.S. Patent and Trademark Office
Flight Characteristics; Histories; Aircraft Maneuvers; Time Measurement; Civil Aviation



05
AIRCRAFT DESIGN, TESTING AND PERFORMANCE

Includes all stages of design of aircraft and aircraft structures and systems. Also includes aircraft testing, performance and evaluation, and aircraft and flight simulation technology. For related information see also 18 Spacecraft Design, Testing and Performance and 39 Structural Mechanics. For land transportation vehicles see 85 Technology Utilization and Surface Transportation.

20060049149 NASA Langley Research Center, Hampton, VA, USA
Slotted Aircraft Wing
Vassberg, John C., Inventor; Gea, Lie-Mine, Inventor; McLean, James D., Inventor; Witowski, David P., Inventor; Krist, Steven E., Inventor; Campbell, Richard L., Inventor; May 23, 2006; 33 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 9 Oct. 2002; US-Patent-7,048,228; US-Patent-Appl-SN-678474; US-Patent-Appl-SN-417355; NASA-Case-LAR-16517-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060049149

An aircraft wing includes a leading airfoil element and a trailing airfoil element. At least one slot is defined by the wing during at least one transonic condition of the wing. The slot may either extend spanwise along only a portion of the wingspan, or it may extend spanwise along the entire wingspan. In either case, the slot allows a portion of the air flowing along the lower surface of the leading airfoil element to split and flow over the upper surface of the trailing airfoil element so as to achieve a performance improvement in the transonic condition.
Official Gazette of the U.S. Patent and Trademark Office
Airfoils; Slots; Wings

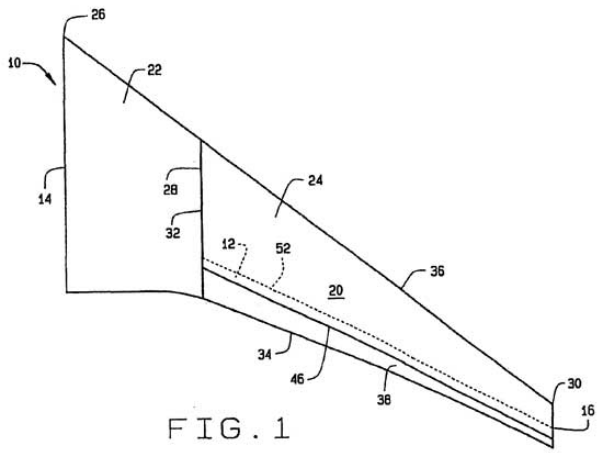


FIG. 1

20060050044 NASA Langley Research Center, Hampton, VA, USA

Slotted Aircraft Wing

McLean, James D., Inventor; Witkowski, David P., Inventor; Campbell, Richard L., Inventor; May 23, 2006; 32 pp.; In English; Original contains black and white illustrations

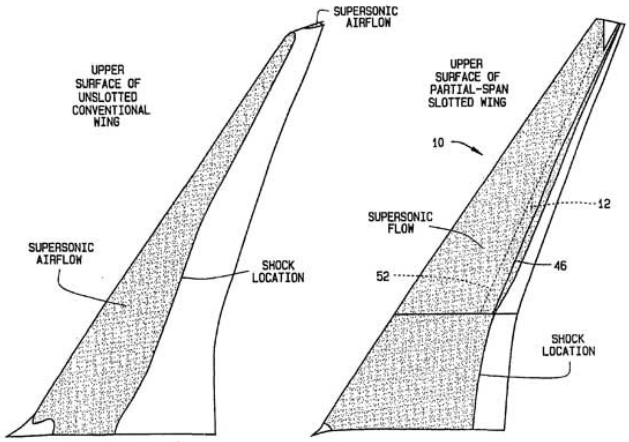
Patent Info.: Filed 3 Oct. 2003; US-Patent-7,048,235; US-Patent-Appl-SN-678397; US-Patent-Appl-SN-417355; NASA-Case-LAR-16696-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060050044

A swept aircraft wing includes a leading airfoil element and a trailing airfoil element. At least one full-span slot is defined by the wing during at least one transonic condition of the wing. The full-span slot allows a portion of the air flowing along the lower surface of the leading airfoil element to split and flow over the upper surface of the trailing airfoil element so as to achieve a performance improvement in the transonic condition.

Official Gazette of the U.S. Patent and Trademark Office

Swept Wings; Airfoils; Slots; Trailing Edges; Leading Edges



20070003564 NASA Langley Research Center, Hampton, VA, USA

Method for Correcting Control Surface Angle Measurements in Single Viewpoint Photogrammetry

Burner, Alpheus W., Inventor; Barrows, Danny A., Inventor; October 31, 2006; 8 pp.; In English; Original contains black and white illustrations

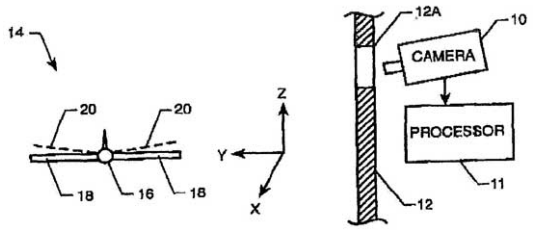
Patent Info.: Filed 20 Sep. 2005; US-Patent-7,130725; US-Patent-Appl-SN-239457; NASA-Case-LAR-17021-1; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070003564

A method of determining a corrected control surface angle for use in single viewpoint photogrammetry to correct control surface angle measurements affected by wing bending. First and second visual targets are spaced apart &om one another on a control surface of an aircraft wing. The targets are positioned at a semispan distance along the aircraft wing. A reference target separation distance is determined using single viewpoint photogrammetry for a 'wind off condition. An apparent target separation distance is then computed for 'wind on.' The difference between the reference and apparent target separation distances is minimized by recomputing the single viewpoint photogrammetric solution for incrementally changed values of target semispan distances. A final single viewpoint photogrammetric solution is then generated that uses the corrected semispan distance that produced the minimized difference between the reference and apparent target separation distances. The final single viewpoint photogrammetric solution set is used to determine the corrected control surface angle.

Official Gazette of the U.S. Patent and Trademark Office

Control Surfaces; Correction; Photogrammetry; Angles (Geometry)



20070025074 Bachman and Lapointe, P.C., New Haven, CT, USA

Airfoil Surface Impedance Modificaton for Noise Reduction in Turbofan Engines

Prasad, Dilip, Inventor; Morin, Bruce L., Inventor; Lord, Wesley K., Inventor; Mathews, Douglas C., Inventor; 23 Jun. 2005; 6 pp.; In English; Original contains black and white illustrations

Contract(s)/Grant(s): NAS3-98005

Patent Info.: Filed 22 Dec . 2003; US-Patent-Appl-10/744983; US 2005/0135924

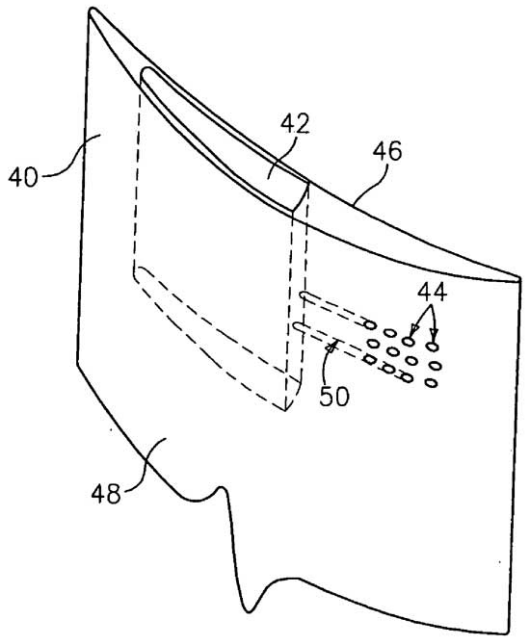
Report No.(s): PB2007-103106; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025074

In accordance with the present invention, an aircraft engine is provided with a component which helps reduce the noise generated by the engine. The component has a first aerodynamic surface, a second aerodynamic surface, and a system for reducing noise without altering a pressure differential between the first aerodynamic surface and the second aerodynamic surface.

Author

Airfoils; Noise Reduction; Turbofan Engines; Surface Properties; Jet Aircraft Noise; Engine Noise



20070025472 Honeywell International, Inc., Morristown, NJ, USA

Flight Control Actuation System

Wingett, Paul T., Inventor; Gaines, Louie T., Inventor; Evans, Paul S., Inventor; Kern, I., Inventor; 16 Jun. 2005; 16 pp.; In English; Original contains black and white illustrations

Contract(s)/Grant(s): NCC8-115

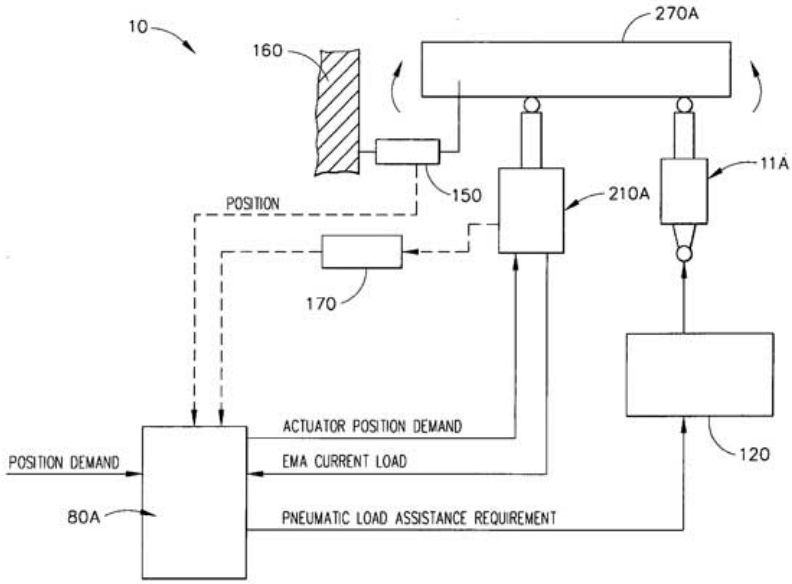
Patent Info.: Filed 22 Jun. 2004; US-Patent-Appl-10/874729; US 2005/0127241

Report No.(s): PB2007-102551; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025472

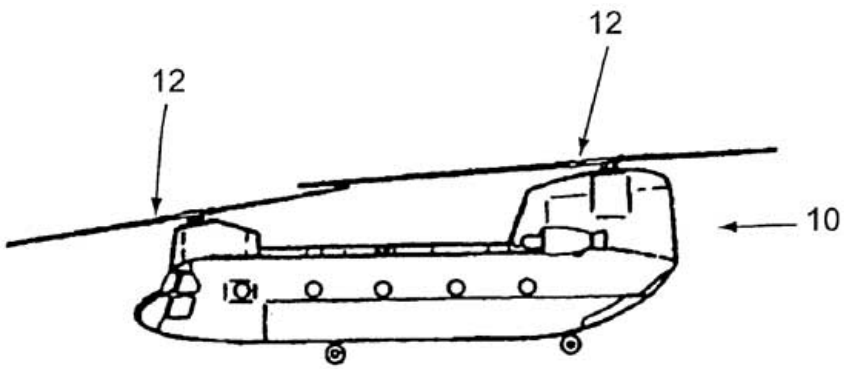
A flight control actuation system comprises a controller, electromechanical actuator and a pneumatic actuator. During normal operation, only the electromechanical actuator is needed to operate a flight control surface. When the electromechanical actuator load level exceeds 40 amps positive, the controller activates the pneumatic actuator to offset electromechanical actuator loads to assist the manipulation of flight control surfaces. The assistance from the pneumatic load assist actuator enables the use of an electromechanical actuator that is smaller in size and mass, requires less power, needs less

cooling processes, achieves high output forces and adapts to electrical current variations. The flight control actuation system is adapted for aircraft, spacecraft, missiles, and other flight vehicles, especially flight vehicles that are large in size and travel at high velocities.
Official Gazette of the U.S. Patent and Trademark Office
Actuators; Flight Control; Aircraft Control; Control Systems Design



20070028822 Coburn (Thompson) LLP, Saint Louis, MO, USA
High Ratio, Reduced Size Epicyclic Gear Transmission for Rotary Wing Aircraft with Improved Safety and Noise Reduction
Drago, Raymond J., Inventor; Lenski, Joseph W., Inventor; Robuck, Mark J., Inventor; 16 Jun. 2005; 20 pp.; In English
Contract(s)/Grant(s): NCC2-9019
Patent Info.: Filed 10 Nov. 2003; US-Patent-Appl-SN-10-706497; US 2005/0130792
Report No.(s): PB2007-102598; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070028822

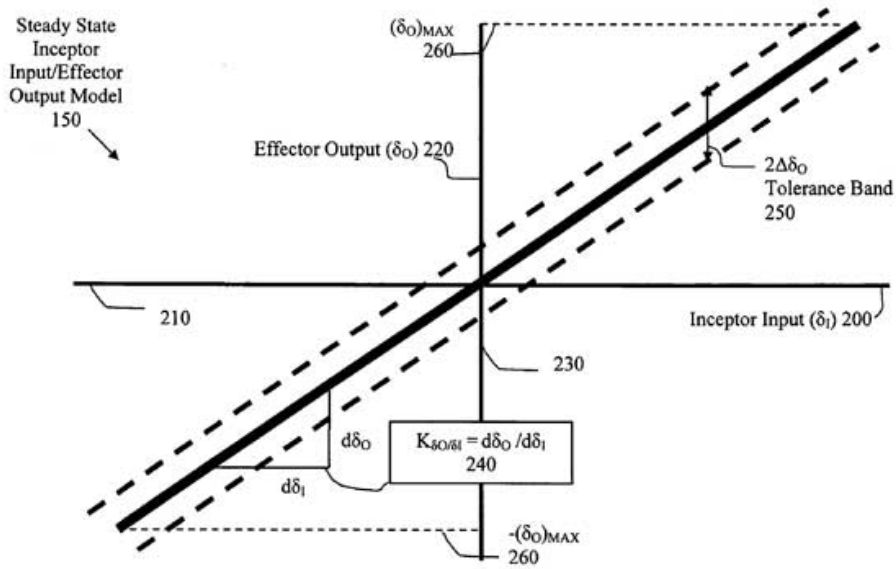
A high ratio, double helical epicyclic gear transmission that is primarily intended for use in rotary wing aircraft employs double helical planet gears to obtain a reduction in size of the transmission, to improve the safety of the transmission, and to reduce the noise created by operation of the transmission.
Author
Gears; Noise Reduction; Rotary Wing Aircraft; Transmissions (Machine Elements); Safety



Includes all avionics systems, cockpit and cabin display devices, and flight instruments intended for use in aircraft. For related information see also 04 Aircraft Communications and Navigation; 08 Aircraft Stability and Control; 19 Spacecraft Instrumentation and Astrionics; and 35 Instrumentation and Photography.

20070017863 NASA Langley Research Center, Hampton, VA USA
Method and Apparatus for Loss of Control Inhibitor Systems
Harrah, Ralph C. A., Inventor; October 20, 2005; 8 pp.; In English
Patent Info.: Filed 27 Oct. 2004; US-Patent-Appl-SN-975119; US-Patent-Appl-SN-515215
Report No.(s): PB2007-105980; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070017863

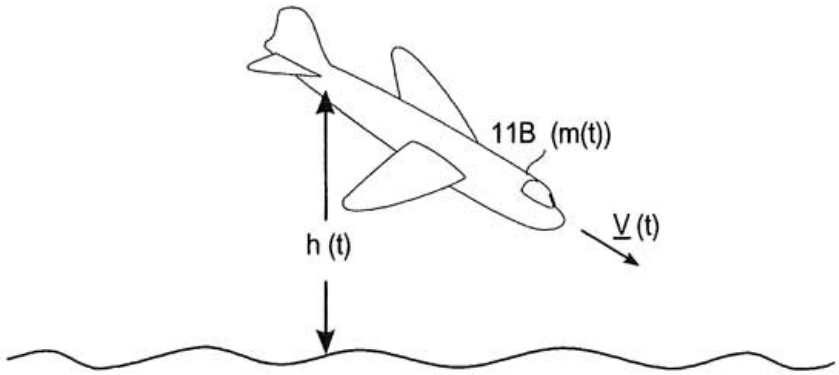
Active and adaptive systems and methods to prevent loss of control incidents by providing tactile feedback to a vehicle operator are disclosed. According to the present invention, an operator gives a control input to an inceptor. An inceptor sensor measures an inceptor input value of the control input. The inceptor input is used as an input to a Steady-State Inceptor Input/Effector Output Model that models the vehicle control system design. A desired effector output from the inceptor input is generated from the model. The desired effector output is compared to an actual effector output to get a distortion metric. A feedback force is generated as a function of the distortion metric. The feedback force is used as an input to a feedback force generator which generates a loss of control inhibitor system (LOCIS) force back to the inceptor. The LOCIS force is felt by the operator through the inceptor.
Author
Flight Control; Control Systems Design; Active Control; Adaptive Control



20070023677 NASA Ames Research Center, Moffett Field, CA, USA
Real Time Analysis and Display of Aircraft Approach Maneuvers
Lynch, Robert E., Inventor; Chidester, Thomas R., Inventor; Lawrence, Robert E., Inventor; 1 May 2007; 12 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 22 Feb. 2005; US-Patent-7,212,135; US-Patent-Appl-10/066649; US-Patent-Appl-10/956523;
NASA-Case-ARC-15356-3; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023677

Method and system for monitoring and comparing, in real time, performance of an aircraft during an approach to touchdown along a conventional approach path and along a contemplated modified approach path to touchdown. In a first procedure, a flight parameter value at a selected location is compared and displayed, for the planned path and for the modified path. In a second procedure, flight parameter values FP(t(sub m)) at a sequence (t(sub n)}n, of measurement times is compared and displayed, for the planned path and for a contemplated or presently-executed modified path. If the flight parameter for the

planned path and for the modified path differ too much from each other, the pilot in command has an option of terminating the approach along the modified path.
Author
Flight Paths; Real Time Operation; Aircraft Landing; Aircraft Maneuvers; Approach Control; Flight Instruments; Aircraft Instruments; Flight Management Systems; Pilot Support Systems

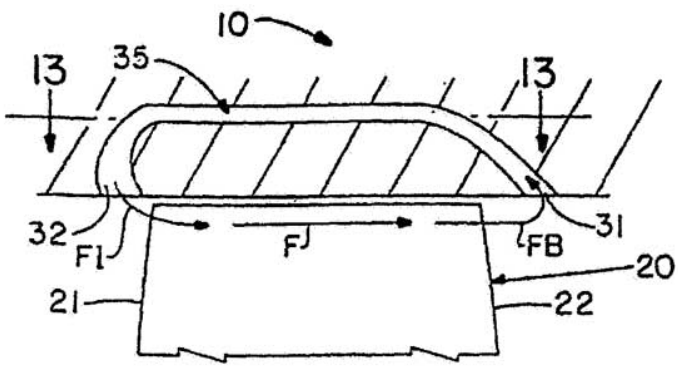


07
AIRCRAFT PROPULSION AND POWER

Includes primary propulsion systems and related systems and components, e.g., gas turbine engines, compressors, and fuel systems; and onboard auxiliary power plants for aircraft. For related information see also 20 Spacecraft Propulsion and Power; 28 Propellants and Fuels; and 44 Energy Production and Conversion.

20060050050 NASA Glenn Research Center, Cleveland, OH, USA
Endwall Treatment and Method for Gas Turbine
Hathaway, Michael D., Inventor; Strazisar, Anthony J., Inventor; Suder, Kenneth L., Inventor; July 11, 2006; 23 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 8 Oct. 2002; US-Patent-7,074,006; US-Patent-Appl-SN-10267884; NASA-Case-LEW-17176-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050050

An endwall treatment for a gas turbine engine having at least one rotor blade extending from a rotatable hub and a casing circumferentially surrounding the rotor and the hub, the endwall treatment including, an inlet formed in an endwall of the gas turbine engine adapted to ingest fluid from a region of a higher-pressure fluid, an outlet formed in the endwall and located in a region of lower pressure than the inlet, wherein the inlet and the outlet are in a fluid communication with each other, the outlet being adapted to inject the fluid from the inlet in the region of lower pressure, and wherein the outlet is at least partially circumferentially offset relative to the inlet.
Official Gazette of the U.S. Patent and Trademark Office
Gas Turbine Engines; Gas Turbines; Hubs; Rotors



20070006626 Honeywell International, Inc., Morristown, NJ, USA

Nonlinearly Stacked Low Noise Turbofan Stator

Schuster, W. B.; Kontos, K. B.; Weir, D. S.; Nolcheff, N. A.; Gunara, J. A.; 23 Jun 05; 14 pp.; In English

Contract(s)/Grant(s): NAS3-0036

Patent Info.: Filed Filed 23 Jun 05; US-Patent-Appl-SN-11-166-668

Report No.(s): PB2007-101349; No Copyright; Avail: CASI; A03, Hardcopy

The present invention provides a nonlinearly stacked low noise turbofan stator vane. The stator is in an axial fan or compressor turbomachinery stage that is comprised of a collection of vanes whose highly three-dimensional shape is selected to reduce rotor-stator and rotor-strut interaction noise while maintaining the aerodynamic and mechanical performance of the vane. The nonlinearly stacked low noise turbofan stator vane reduces noise associated with the fan stage of turbomachinery to improve environmental compatibility. The stator vane has a characteristic curve that is characterized by a nonlinear sweep and a nonlinear lean.

NTIS

Engine Noise; Low Noise; Stators; Turbofans; Vanes

20070028823 Honeywell International, Inc., Morristown, NJ, USA

Reduced Exhaust Emissions Gas Turbine Engine Combustor

Zupanc, Frank J., Inventor; Yankowich, Paul R., Inventor; 23 Jun. 2005; 10 pp.; In English

Contract(s)/Grant(s): NAS3-01136

Patent Info.: Filed 23 Dec. 2003; US-Patent-Appl-SN-10/746654; US 2005/0132716

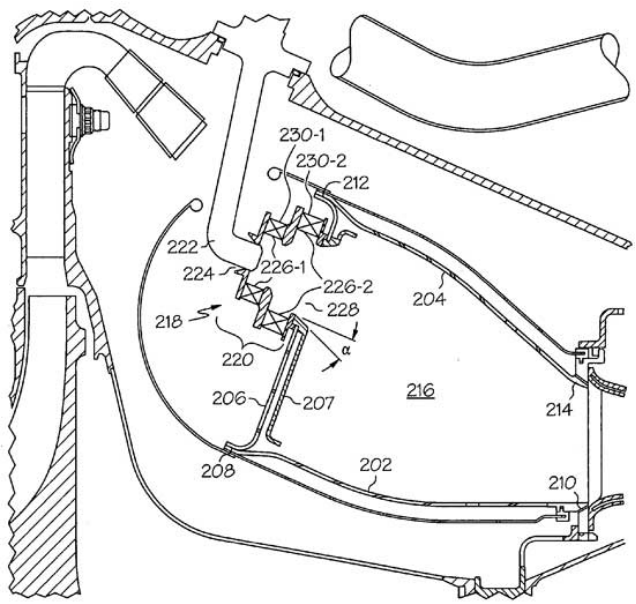
Report No.(s): PB2007-102623; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070028823

A gas turbine engine combustor includes a plurality of main fuel injector assemblies, and a plurality of pilot fuel injector assemblies, that are arranged and configured to reduce exhaust gas emissions during engine operation. The plurality of main fuel injector assemblies are arranged in a substantially circular pattern of a first radius, and each includes an outlet port having a first divergence angle. The plurality of pilot fuel injector assemblies are arranged in a substantially circular pattern of a second radius. Each pilot fuel injector assembly is disposed between at least two main fuel injector assemblies, and each includes an outlet port having a second divergence angle.

Author

Combustion Chambers; Exhaust Emission; Gas Turbine Engines; Pollution Control; Aircraft Engines



Includes flight dynamics, aircraft handling qualities, piloting, flight controls, and autopilots. For related information see also 05 Aircraft Design, Testing and Performance; and 06 Avionics and Aircraft Instrumentation.

20060049129 NASA Ames Research Center, Moffett Field, CA, USA

Energy Index For Aircraft Maneuvers

Chidester, Thomas R., Inventor; Lynch, Robert E., Inventor; Lawrence, Robert E., Inventor; Amidan, Brett G., Inventor; Ferryman, Thomas A., Inventor; Drew, Douglas A., Inventor; Ainsworth, Robert J., Inventor; Prothero, Gary L., Inventor; Romanowski, Tomothy P., Inventor; Bloch, Laurent, Inventor; July 11, 2006; 9 pp.; In English; Original contains black and white illustrations

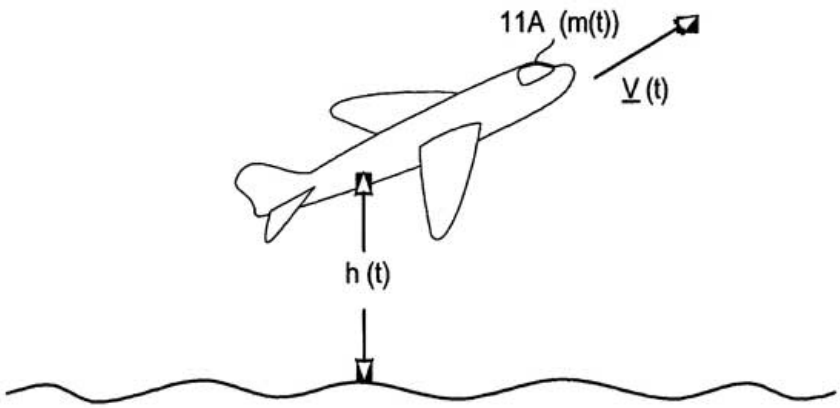
Patent Info.: Filed 22 Sept. 2004; US-Patent-7,075,457; US-Patent-Appl-SN-956523; NASA-Case-ARC-15356-1; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060049129

Method and system for analyzing, separately or in combination, kinetic energy and potential energy and/or their time derivatives, measured or estimated or computed, for an aircraft in approach phase or in takeoff phase, to determine if the aircraft is or will be put in an anomalous configuration in order to join a stable approach path or takeoff path. A 3 reference value of kinetic energy andor potential energy (or time derivatives thereof) is provided, and a comparison index .for the estimated energy and reference energy is computed and compared with a normal range of index values for a corresponding aircraft maneuver. If the computed energy index lies outside the normal index range, this phase of the aircraft is identified as anomalous, non-normal or potentially unstable.

Official Gazette of the U.S. Patent and Trademark Office

Aircraft Maneuvers; Estimating; Takeoff; Derivation; Kinetic Energy; Potential Energy



20060050056 NASA Langley Research Center, Hampton, VA, USA

Channel-wing System for Thrust Deflection and Force/Moment Generation

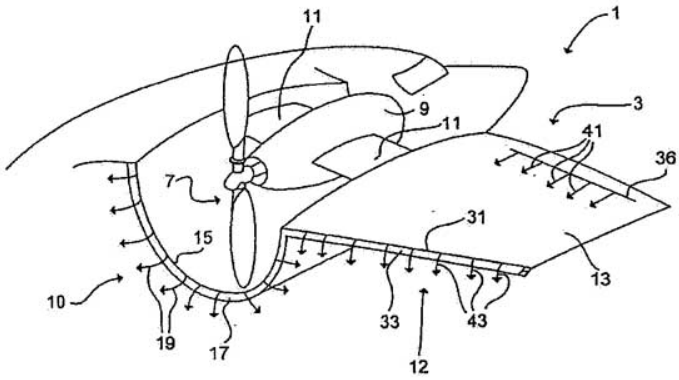
Englar, Robert J., Inventor; Bushnell, Dennis M., Inventor; September 12, 2006; 10 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 14 Jun. 2004; US-Patent-7,104,498; US-Patent-Appl-SN-867114; NASA-Case-LAR-16496-1; US-Patent-Appl-SN-478186; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060050056

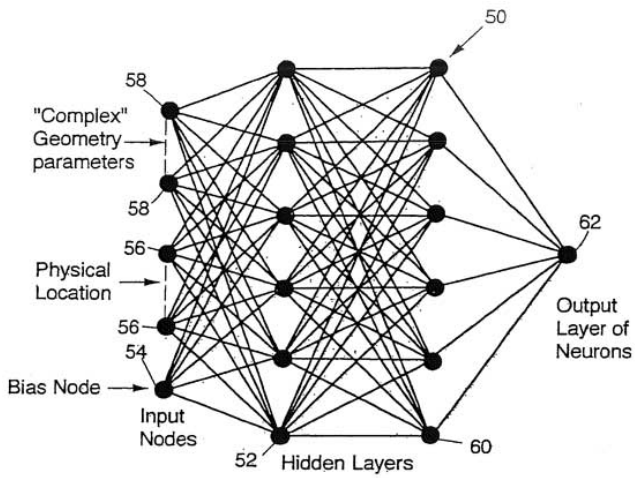
An aircraft comprising a Channel Wing having blown c h - ne1 circulation control wings (CCW) for various functions. The blown channel CCW includes a channel that has a rounded or near-round trailing edge. The channel further has a trailing-edge slot that is adjacent to the rounded trailing edge of the channel. The trailing-edge slot has an inlet connected to a source of pressurized air and is capable of tangentially discharging pressurized air over the rounded trailing edge. The aircraft further has a propeller that is located in the channel and ahead of the rounded trailing edge of the channel. The propeller provides a propeller thrust exhaust stream across the channel wing to propel the aircraft through the air and to provide high lift. The pressurized air being discharged over the rounded trailing edge provides a high lift that is obtained independent of an aircraft angle of attack, thus preventing the asymmetry. separated flow, and stall experienced by the CC wing at the high angle of attack it required for high lift generation. The aircraft can further include blown outboard circulation control wings

(CCW) that are synergistically connected to the blown channel CCWs. The blown outboard CCWs provide additional high lift, control thrust/drag interchange, and can provide all three aerodynamic moments when differential blowing is applied front-to-rear or left-to-right. Both the blown channel CCW and the outboard CCW also have leading-edge blowing slots to prevent flow separation or to provide aerodynamic moments for control.
Official Gazette of the U.S. Patent and Trademark Office
Trailing Edges; Channel Wings; Thrust; Leading Edges; Slots; Propellers; Exhaust Gases; Gas Streams; Boundary Layer Separation; Angle of Attack



20070023485 NASA Ames Research Center, Moffett Field, CA, USA
Method for Constructing Composite Response Surfaces by Combining Neural Networks with Polynominal Interpolation or Estimation Techniques
Rai, Man Mohan, Inventor; Madavan, Nateri K., Inventor; March 13, 2007; 17 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 31 Jul. 2003; US-Patent-7,191,161; US-Patent-Appl-SN-637087; NASA-Case-ARC-14281-3; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023485

A method and system for data modeling that incorporates the advantages of both traditional response surface methodology (RSM) and neural networks is disclosed. The invention partitions the parameters into a first set of s simple parameters, where observable data are expressible as low order polynomials, and c complex parameters that reflect more complicated variation of the observed data. Variation of the data with the simple parameters is modeled using polynomials; and variation of the data with the complex parameters at each vertex is analyzed using a neural network. Variations with the simple parameters and with the complex parameters are expressed using a first sequence of shape functions and a second sequence of neural network functions. The first and second sequences are multiplicatively combined to form a composite response surface, dependent upon the parameter values, that can be used to identify an accurate mode
Author
Interpolation; Neural Nets; Control Surfaces; Polynomials



12
ASTRONAUTICS (GENERAL)

Includes general research topics related to space flight and manned and unmanned space vehicles, platforms or objects launched into, or assembled in, outer space; and related components and equipment. Also includes manufacturing and maintenance of such vehicles or platforms. For specific topics in astronautics see *categories 13 through 20*. For extraterrestrial exploration see *91 Lunar and Planetary Science and Exploration*.

20070025468 Johns Hopkins Univ., Laurel, MD, USA

Time of Flight System on a Chip

Daschalidis, N. P., Inventor; 29 Sep. 2005; 12 pp.; In English; Original contains black and white illustrations

Contract(s)/Grant(s): NAGw-4547; NAGw-58516

Patent Info.: Filed 10 Apr. 2003; US-Patent-Appl-10/511069; US 2005/0211893

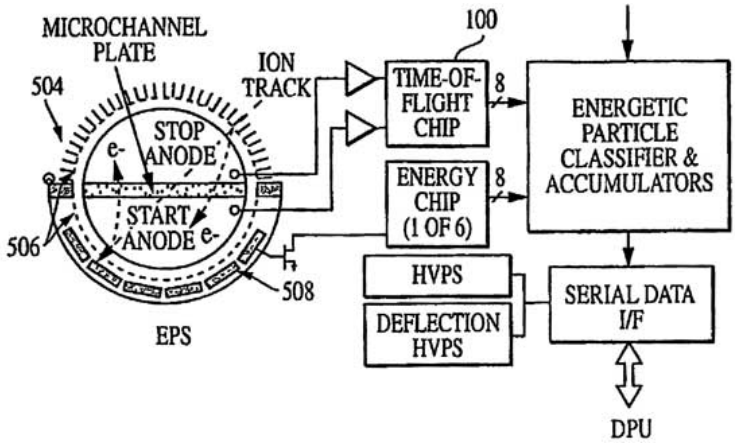
Report No.(s): PB2007-105312; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025468

A CMOS time-of-flight 'TOF' system-on-a-chip 'SoC' for precise time interval measurement with low power consumption and high counting rate has been developed. The analog and digital TOF chip may include two Constant Fraction Discriminators 'CFDs' and a Time-to-Digital Converter 'TDC'. The CFDs can interface to start and stop anodes through two preamplifiers and perform signal processing for time walk compensation. The TDC digitizes the time difference with reference to an off-chip precise external clock. One TOF output is an 11-bit digital word and a valid event trigger output indicating a valid event on the 11-bit output bus.

Author

Chips; Patent Applications; Systems-on-a-Chip



13
ASTRODYNAMICS

Includes powered and free flight trajectories; orbital and launching dynamics.

20070025471 Alston and Bird, LLP, Charlotte, NC, USA

Method, Apparatus and Computer Program Product for Safe Exit Maneuver from Dimensionally Extended Rotating Space Vehicle

Kinstler, Gary A., Inventor; 13 Oct. 2005; 14 pp.; In English; Original contains black and white illustrations

Contract(s)/Grant(s): NAS8-01099

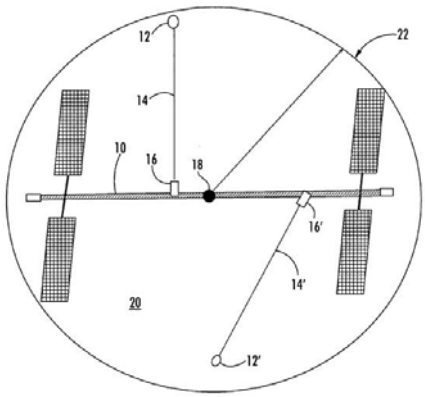
Patent Info.: Filed 16 Mar. 2004; US-Patent-Appl-10/802021; US 2005/0224661

Report No.(s): PB2007-105842; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025471

There is provided methods, apparatus, and computer program products for implementing a KINSTLER maneuver for an exit vehicle that is departing from a rotating space vehicle such that the exit vehicle does not contact the space vehicle during departure. A composite spin axis of the space vehicle is determined, which defines a plurality of spin axis planes that contain the exit vehicle along the exit flight path. The spin rate of the rotating space vehicle is determined about the composite spin axis, and the exit vehicle is launched from the space vehicle, providing the exit vehicle with a departure velocity having a V(sub S) component. Lateral thrust is applied to provide a lateral acceleration, which provides a turn rate of the exit vehicle's

V(sub S) component in the spin axis plane about the composite spin axis that is proportionate to the spin rate of the rotating space vehicle.
Official Gazette of the U.S. Patent and Trademark Office
Computer Programs; Rotating Bodies; Stationkeeping; Maneuvers

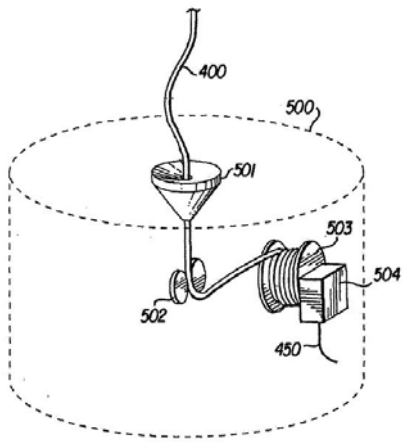


18
SPACECRAFT DESIGN, TESTING AND PERFORMANCE

Includes satellites; space platforms; space stations; spacecraft systems and components such as thermal and environmental controls; and spacecraft control and stability characteristics. For life support systems see *54 Man/System Technology and Life Support*. For related information see also *05 Aircraft Design, Testing and Performance; 39 Structural Mechanics*; and *16 Space Transportation and Safety*.

20070003580 NASA Marshall Space Flight Center, Huntsville, AL, USA
Electrodynamic Tether
Johnson, Charles L., Inventor; Ballance, Judy L., Inventor; Welzyn, Kenneth J., Inventor; Vaughn, Jason A., Inventor; Lorenzini, Enrico, Inventor; Schuler, Peter S., Inventor; October 10, 2006; 11 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 17 Oct. 2003; US-Patent-7,118, 074; US-Patent-Appl-SN-690161; NASA-Case-MFS-31490-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070003580

A tether system for providing thrust to or power subsystems of an artificial satellite in a low earth orbit. The tether has three main sections, an insulated section connected to the satellite, a conducting section connected to the insulating section for drawing in and releasing electrons from the space plasma and a non-conducting section for providing a tension to the other sections of the tether. An oxygen resistant coating is applied to the bare wire of the conducting section as well as the insulated wires of the insulated section that prevents breakdown during tether operations in the space plasma. The insulated and bare wire sections also surround a high tensile flexible polymer core to prevent any debris from breaking the tether during use.
Official Gazette of the U.S. Patent and Trademark Office
Tethering; Electrodynamics; Artificial Satellites; Thrust



23
CHEMISTRY AND MATERIALS (GENERAL)

Includes general research topics related to the composition, properties, structure, and use of chemical compounds and materials as they relate to aircraft, launch vehicles, and spacecraft. For specific topics in chemistry and materials see *categories 25 through 29*. For astrochemistry see category *90 Astrophysics*.

20060050054 NASA Langley Research Center, Hampton, VA, USA
Space Environmentally Durable Polyimides and Copolyimides
Connell, John W., Inventor; Smith, Joseph G., Inventor; Hergenrother, Paul M., Inventor; Watson, Kent A., Inventor; Thompson, Craig M., Inventor; September 19, 2006; 68 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 8 Nov. 2004; US-Patent-7,109,287; US-Patent-Appl-SN-988407; NASA-Case-LAR-16176-2; US-Patent-Appl-SN-095340; US-Patent-Appl-SN-6841652; US-Patent-Appl-SN-292262; No Copyright; Avail: CASI; A04, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050054

Polyimides displaying low color in thin films, atomic oxygen resistance, vacuum ultraviolet radiation resistance, solubility in organic solvents in the imide form, high glass transition (T(sub g)) temperatures, and high thermal stability are provided. The poly(amide acid)s, copoly(amide acid)s, polyimides and copolyimides are prepared by the reaction of stoichiometric ratios of an aromatic &anhydride with diamines which contain phenylphosphine oxide groups in polar aprotic solvents. Controlled molecular weight oligomeric (amide acid)s and imides can be prepared by offsetting the stoichiometry according to the Carothers equation using excess diamine and endcapping with aromatic anhydrides. The polyimide materials can be processed into various material forms such as thin films, fibers, foams, threads, adhesive film, coatings, dry powders, and fiber coated prepreg, and uses include thin film membranes on antennas, second-surface mirrors, thermal optical coatings, and multilayer thermal insulation (MLI) blanket materials.
Official Gazette of the U.S. Patent and Trademark Office
Polyimides; Glass Transition Temperature; Solvents; Thermal Stability; Thin Films; Amides; Stoichiometry

20070011515 Jenkins, Wilson, Taylor and Hunt, P.A., Durham, NC, USA, Duke Univ., Durham, NC, USA
Systems and Methods for Producing Single-walled Carbon Nanotubes (SWNTS) on a Substrate
Liu, J.; Huang, S.; Fu, Q.; 16 Jan 04; 35 pp.; In English
Contract(s)/Grant(s): NAG-1-01061; DAAD19-00-1-0548
Patent Info.: Filed Filed 16 Jan 04; US-Patent-Appl-SN-10-759 592
Report No.(s): PB2007-101623; No Copyright; Avail: CASI; A03, Hardcopy

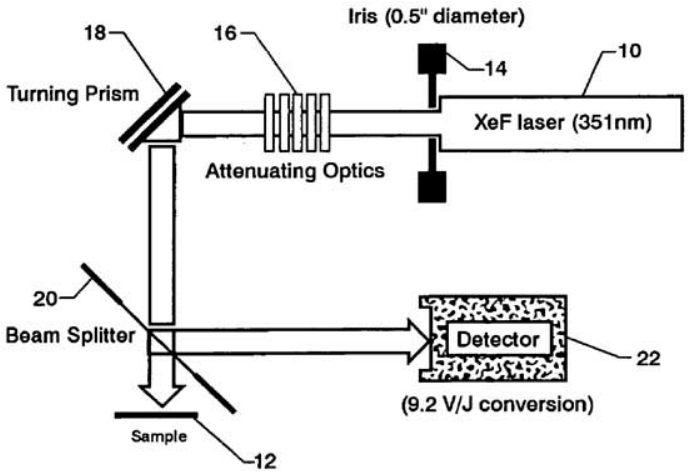
According to one embodiment, a method of fabricating a nanotube on a substrate is provided. The method can include a step for attaching a catalyst to a substrate. The method can also include a step for heating the catalyst to a predetermined temperature such that a nanotube grows from the catalyst. Further, the method can include a step for directing a feeding gas over the catalyst in a predetermined direction such that the nanotube grows in the predetermined direction.
NTIS
Carbon Nanotubes; Substrates; Methodology

20070012785 Licata and Tyrrell, P.C.., Marlton, NJ, USA
Continuous Organic and Inorganic Matrix Composite Fibrils and Methods for Their Production from Carbon Nanotubes
Ko, F. K.; Ali, A. A.; Geshury, A.; 16 Dec 04; 4 pp.; In English
Contract(s)/Grant(s): NAG 101061; NSF-DMR-0116645
Patent Info.: Filed Filed 16 Dec 04; US-Patent-Appl-SN-11-016-281
Report No.(s): PB2007-105930; No Copyright; Avail: CASI; A01, Hardcopy

Continuous nanoscale composite fibrils of carbon nanotube in a polymer matrix of polyacrylonitrile (PAN) or any other compatible polymer are provided. Methods for their production by electrospinning are also provided.
NTIS
Carbon Nanotubes; Matrix Methods; Nanostructure Growth

20070017886 NASA Langley Research Center, Hampton, VA USA
Laser-Induced Fabrication of Metallic Interlayers and Patterns in Polyimide Films
Milner, Gilda A., Inventor; Stoakley, Diane M., Inventor; Gaddy, Gregory A., Inventor; Koplitz, Brent D., Inventor; Simpson, Steven M., Inventor; Lynch, Michael F., Inventor; Ruffner, Samuel C., Inventor; October 20, 2005; 12 pp.; In English
Patent Info.: Filed 30 Sep. 2004; US-Patent-Appl-956704; US-Patent-Appl-564845
Report No.(s): PB2007-105985; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070017886

Self-metallizing polyimide films are created by doping polyamic acid solutions with metallic ions and solubilizing agents. Upon creating a film, the film is exposed to coherent light for a specific time and then cured. The resulting film has been found to have a metallic surface layer and a metallic subsurface layer (interlayer). The layer separating the metallic layer has a uniform dispersion of small metal particulates within the polymer. The layer below the interlayer has larger metal particulates uniformly distributed within the polymer. By varying the intensity or time of exposure to the coherent light, three-dimensional control of metal formation within the film is provided.
Author
Metal Films; Polyimides; Metallizing; Surface Layers; Interlayers



20070019998 NASA Ames Research Center, Moffett Field, CA, USA
Nanoengineered Thermal Materials Based on Carbon Nanotube Array Composites
Li, J., Inventor; Meyyappan, M., Inventor; 13 Apr 04; 13 pp.; In English
Patent Info.: Filed Filed 13 Apr 04; US-Patent-Appl-SN-10-825 705
Report No.(s): PB2007-105846; No Copyright; Avail: CASI; A03, Hardcopy

A method for providing for thermal conduction using an array of carbon nanotubes (CNTs). An array of vertically oriented CNTs is grown on a substrate having high thermal conductivity, and interstitial regions between adjacent CNTs in the array are partly or wholly filled with a filler material having a high thermal conductivity so that at least one end of each CNT is exposed. The exposed end of each CNT is pressed against a surface of an object from which heat is to be removed. The CNT-filler composite adjacent to the substrate provides improved mechanical strength to anchor CNTs in place and also serves as a heat spreader to improve diffusion of heat flux from the smaller volume (CNTs) to a larger heat sink.
NTIS
Carbon Nanotubes; Conductive Heat Transfer; Patent Applications; Semiconductor Devices

20070024420 Aspen Aerogels, Inc., Northborough, MA, USA
Polyurea Aerogels
Lee, Je Kyun, Inventor; 21 Sep. 2006; 8 pp.; In English
Contract(s)/Grant(s): NNJ04JA22C
Patent Info.: Filed 20 Mar. 2006; US-Patent-Appl-11/384475; US 2006/0211840
Report No.(s): PB2007-101397; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070024420

Polyurea aerogels as well as methods for preparing the same are disclosed. One method involves mixing a polyisocyanate

with a polyamine in a solvent and supercritically drying the resultant gel. Polyoxyalkyleneamine are a preferred type of the polyamines. Other optional steps for the formation of polyurea aerogels include addition of a catalyst, additives, fiber reinforcement, and aging.
Author
Aerogels; Gels; Ureas; Polymer Chemistry; Biopolymers

20070024451 Bachman and Lapointe, P.C., New Haven, CT, USA
Thermal Resistant Environmental Barrier Coating
Bhatia, Tania, Inventor; Eaton, Harry, Inventor; Sun, Ellen Y., Inventor; Lawton, Thomas H., Inventor; 9 Feb. 2006; 4 pp.; In English
Contract(s)/Grant(s): NAS3-01138
Patent Info.: Filed Filed 9 Aug 04; US-Patent-Appl-10/915158; US 2006/0029814
Report No.(s): PB2007-103931; No Copyright; Avail: CASI; A01, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070024451

A process for preparing a silicon based substrate with a protective coating having improved thermal resistance at temperature up to at least 1500 degrees C, and the resulting article.
Author
Barrier Layers; Silicon; Substrates; Thermal Control Coatings; Thermal Resistance; Protective Coatings

24
COMPOSITE MATERIALS

Includes physical, chemical, and mechanical properties of laminates and other composite materials.

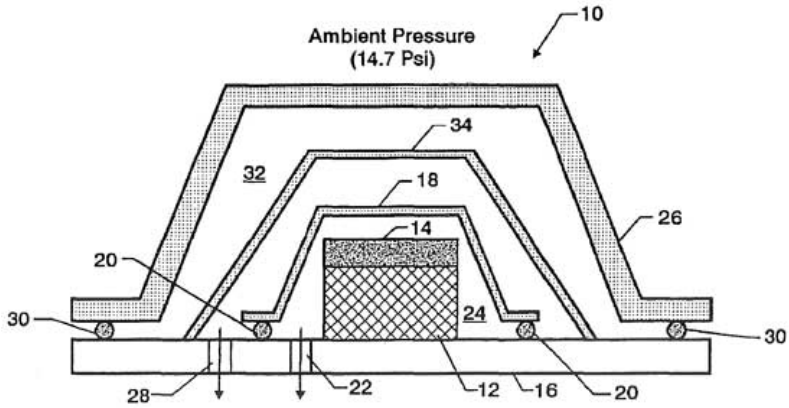
20070003583 NASA Glenn Research Center, Cleveland, OH, USA
Carbon Materials Metal/Metal Oxide Nanoparticle Composite and Battery Anode Composed of the Same
Hung, Ching-Cheh, Inventor; August 22, 2006; 9 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 10 Jun. 2003; US-Patent-7,094,499; US-Patent-Appl-SN-457433; NASA-Case-LEW-17309-01; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070003583

A method of forming a composite material for use as an anode for a lithium-ion battery is disclosed. The steps include selecting a carbon material as a constituent part of the composite, chemically treating the selected carbon material to receive nanoparticles, incorporating nanoparticles into the chemically treated carbon material and removing surface nanoparticles from an outside surface of the carbon material with incorporated nanoparticles. A material making up the nanoparticles alloys with lithium.
Official Gazette of the U.S. Patent and Trademark Office
Anodes; Metal Oxides; Composite Materials; Nanoparticles; Lithium Batteries; Carbon

20070023393 NASA Langley Research Center, Hampton, VA, USA
Double Vacuum Bag Process for Resin Matrix Composite Manufacturing
Hou, Tan-Hung, Inventor; Jensen, Brian J., Inventor; March 06, 2007; 12 pp.; In English; Original contains black and white illustrations; US-Patent-7,186,367; US-Patent-Appl-SN-110996; US-Patent-Appl-SN-571954; NASA-Case-LAR-16877-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023393

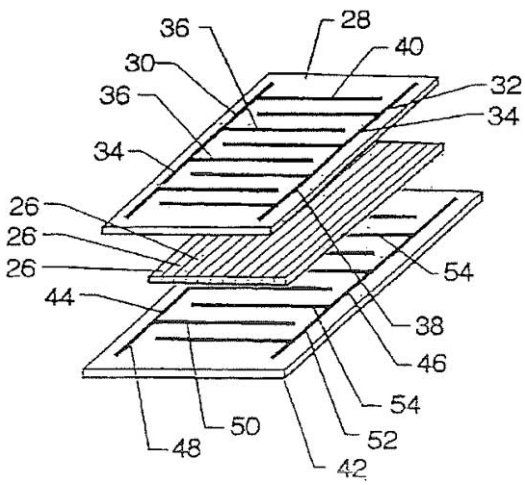
A double vacuum bag molding assembly with improved void management and laminate net shape control which provides a double vacuum enviromnent for use in fabricating composites from prepregs containing air and/or volatiles such as reactive resin matrix composites or composites from solvent containing prepregs with non-reactive resins matrices. By using two vacuum environments during the curing process, a vacuum can be drawn during a B-stage of a two-step cycle without placing the composite under significant relative pressure. During the final cure stage, a significant pressure can be applied by releasing the vacuum in one of the two environments. Inner and outer bags are useful for creating the two vacuum environments with a perforated tool intermediate the two. The composite is placed intermediate a tool plate and a caul plate in the first

environment with the inner bag and tool plate defining the first environment. The second environment is characterized by the outer bag which is placed over the inner bag and the tool plate.
Official Gazette of the U.S. Patent and Trademark Office
Bags; Resin Matrix Composites; Vacuum; Manufacturing; Molds



20070023411 NASA Langley Research Center, Hampton, VA, USA
Method of Fabricating a Composite Apparatus
Wilkie, W. Keats, Inventor; Bryant, Robert G., Inventor; Fox, Robert L., Inventor; Hellbaum, Richard F., Inventor; High, James W., Inventor; Jalink, Antony, Jr., Inventor; April 03, 2007; 14 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 3 September 2003; US-Patent-7,197,798; US-Patent-Appl-SN-653824; NASA-Case-LAR-15816-2; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023411

A method for fabricating a piezoelectric macro-fiber composite actuator comprises making a piezoelectric fiber sheet by providing a plurality of wafers of piezoelectric material, bonding the wafers together with an adhesive material to from a stack of alternating layers of piezoelectric material and adhesive material, and cutting through the stack in a direction substantially parallel to the thickness of the stack and across the alternating layers of piezoelectric material and adhesive material to provide at least one piezoelectric fiber sheet having two sides comprising a plurality of piezoelectric fibers in juxtaposition to the adhesive material. The method further comprises bonding two electrically conductive films to the two sides of the piezoelectric fiber sheet. At least one conductive film has first and second conductive patterns formed thereon which are electrically isolated from one another and in electrical contact with the piezoelectric fiber sheet.
Official Gazette of the U.S. Patent and Trademark Office
Fabrication; Piezoelectricity; Composite Materials; Fibers; Actuators



20070023679 NASA Langley Research Center, Hampton, VA, USA

Templated Growth of Carbon Nanotubes

Siochik Emilie J., Inventor; 30 Jan. 2007; 5 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 11 May 2005; US-Patent-7,169,374; US-Patent-Appl-11/129751; US-Patent-Appl-60/570964;

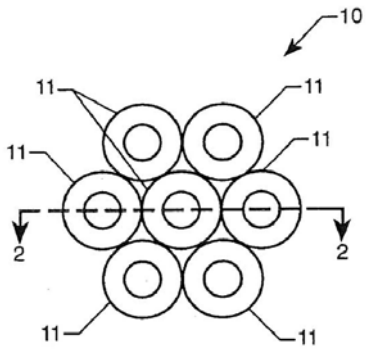
NASA-Case-LAR-16437-1; No Copyright; Avail: CASI; A01, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023679

A method of growing carbon nanotubes uses a synthesized mesoporous silica template with approximately cylindrical pores being formed therein. The surfaces of the pores are coated with a carbon nanotube precursor, and the template with the surfaces of the pores so-coated is then heated until the carbon nanotube precursor in each pore is converted to a carbon nanotube.

Author

Carbon Nanotubes; Nanostructure Growth; Silicon Dioxide; Nanostructure (Characteristics)



20070024452 Dachs (Louis L.), Pacific Palisades, CA, USA

Process for the Manufacture of Composite Structures

Yen, Anna, Inventor; Bohlen, James Winter, Inventor; 16 Jun. 2005; 6 pp.; In English

Contract(s)/Grant(s): NRA8-30

Patent Info.: Filed 15 Dec .2003; US-Patent-Appl-10/736479; US 2005/0126699

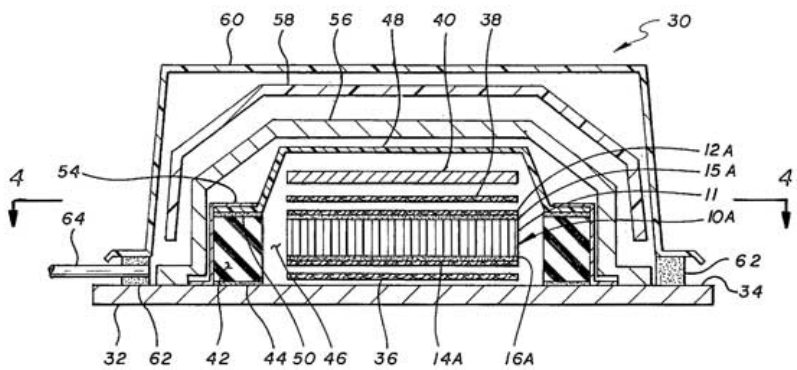
Report No.(s): PB2007-102545; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070024452

The invention is a process for making a composite structure having a honeycomb core and face sheets using vacuum bagging techniques without the use of an autoclave. In detail, the process includes the following steps: (1) forming a preform sandwich assembly having previously de-bulked cover sheets impregnated with a fiber-reinforced resin having a first curing temperature, a honeycomb core and sheets of adhesive between the cover sheets and core, the first layer of adhesive having a second curing temperature less than the first curing temperature; (2) vacuum bagging the preform and drawing a vacuum; (3) initially heating the vacuum bagged preform at a heating rate of between 0.5 degree and 2 degrees per minute until the gel temperature of said adhesive is reached; (4) holding the temperature at the gel temperature until the layer of adhesive has cured; (5) raising the temperature to the first curing temperature of the fiber-reinforced resin; and (6) maintaining the temperature at the first curing temperature until the fiber-reinforced resin has cured.

Official Gazette of the U.S. Patent and Trademark Office

Composite Structures; Manufacturing



20070028825 Watov and Kipnes, P.C., Princeton Junction, NJ, USA

Composite Materials Containing a Nanostructured Carbon Binder Phase and High Pressure Process for Making the Same

Dear, Bernard H., Inventor; Voronov, Oleg A., Inventor; 25 Aug. 2005; 17 pp.; In English

Contract(s)/Grant(s): NAS1-03045; N00014-01-C-0370; N00014-01-1-0079; DAAH-01-OO-CR008

Patent Info.: Filed 23 Mar. 2004; US-Patent-Appl-SN-10-807090; US 2005/0186104

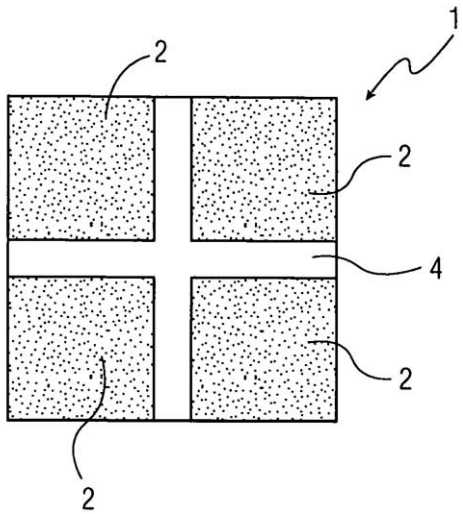
Report No.(s): PB2007-104723; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070028825

A composite material composed of a matrix phase bonded by a carbon binder phase derived from sintered carbon nanoparticles such as, for example, fullerenes. The present invention further relates to a method of making such composite materials which includes the steps of dispersing a sufficient amount of carbon nanoparticles into a matrix phase, and compressing the carbon nanoparticles-containing matrix phase at a sufficient pressure and temperature over a sufficient time to facilitate the conversion of the carbon nanoparticles into a nanostructured carbon binder phase, thereby yielding the composite material.

Author

Binders (Materials); Carbon; Composite Materials; High Pressure



25
INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY

Includes the analysis, synthesis, and use of inorganic and organic compounds; combustion theory; electrochemistry; and photochemistry. For related information see category *34 Fluid Dynamics and Thermodynamics*. For astrochemistry see category *90 Astrophysics*.

20070003579 NASA Kennedy Space Center, Cocoa Beach, FL, USA

Concentration of Hydrogen Peroxide

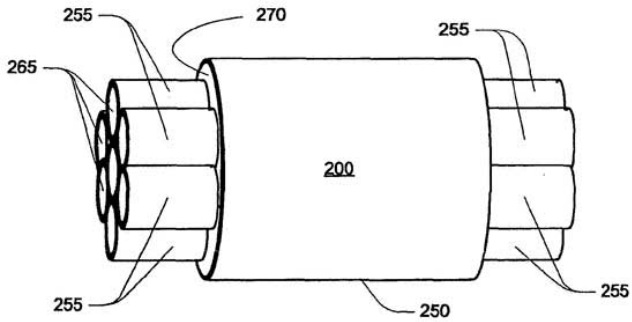
Parrish, Clyde F., Inventor; October 17, 2006; 6 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 11 May 2004; US-Patent-7,122,166; US-Patent-Appl-SN-845607; NASA-Case-KSC-12666; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070003579

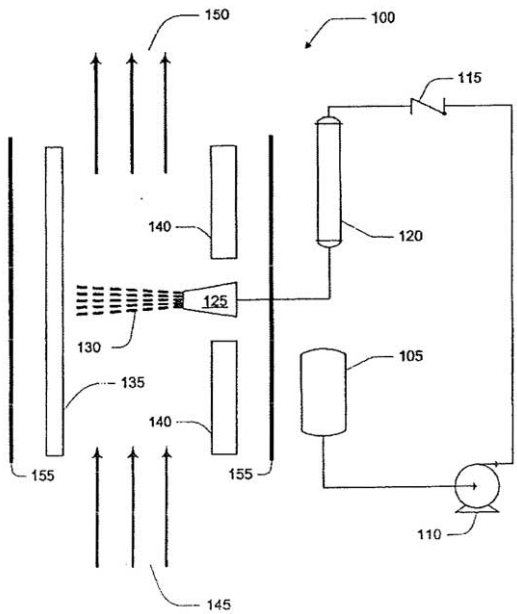
Methods for concentrating hydrogen peroxide solutions have been described. The methods utilize a polymeric membrane separating a hydrogen peroxide solution from a sweep gas or permeate. The membrane is selective to the permeability of water over the permeability of hydrogen peroxide, thereby facilitating the concentration of the hydrogen peroxide solution through the transport of water through the membrane to the permeate. By utilizing methods in accordance with the invention, hydrogen

peroxide solutions of up to 85% by volume or higher may be generated at a point of use without storing substantial quantities of the highly concentrated solutions and without requiring temperatures that would produce explosive mixtures of hydrogen peroxide vapors.
Official Gazette of the U.S. Patent and Trademark Office
Hydrogen Peroxide; Concentration (Composition); Methodology



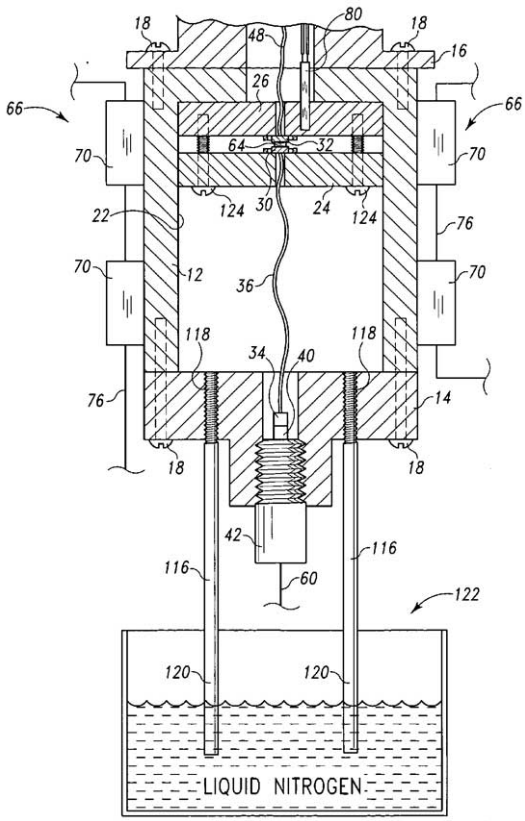
20070023495 NASA Kennedy Space Center, Cocoa Beach, FL, USA
UV Induced Oxidation of Nitric Oxide
Parrish, Clyde, F., Inventor; Luecke, Dale E., Inventor; January 02, 2007; 6 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 15 May 2003; US-Patent-7,156,957; US-Patent-Appl-SN-440543; NASA-Case-KSC-12458; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023495

Nitric oxide in a gaseous stream is converted to nitrogen dioxide using oxidizing species generated at least in part using in situ UV radiation sources. The sources of the oxidizing species include oxygen and/or hydrogen peroxide. The oxygen may be a component of the gaseous stream or added to the gaseous stream, preferably near a UV radiation source, and is converted to ozone by the UV irradiation. The hydrogen peroxide is decomposed through a combination of vaporization and UV irradiation. The hydrogen peroxide is preferably stored at stable concentration levels, i.e., approximately 50% by volume and increased in concentration in a continuous process preceding vaporization within the flow channel of the gaseous stream and in the presence of the UV radiation sources.
Author
Nitric Oxide; Oxidation; Ultraviolet Radiation; Chemical Reactions



20070025473 Barnes and Thornburg, Indianapolis, IN, USA
Variable Temperature Test Cell and Associated Method
Karlinsey, Robert L., Jr., Inventor; Carini, John P., Inventor; 16 Jun. 2005; 9 pp.; In English; Original contains black and white illustrations
Contract(s)/Grant(s): NAG3-2588; NSF DMF-98-70246
Patent Info.: Filed 11 Dec. 2003; US-Patent-Appl-10/733673; US 2005/0127931
Report No.(s): PB2007-102558; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070025473

A test cell for testing the electrochemical properties of a solid-state test specimen is herein disclosed. The test cell includes a heating element operable to increase the temperature of the test specimen to a desired temperature. A method of testing the electrochemical properties of a solid-state specimen is also disclosed.
Author
Solid State; Electrochemistry; Materials Tests; Performance Tests



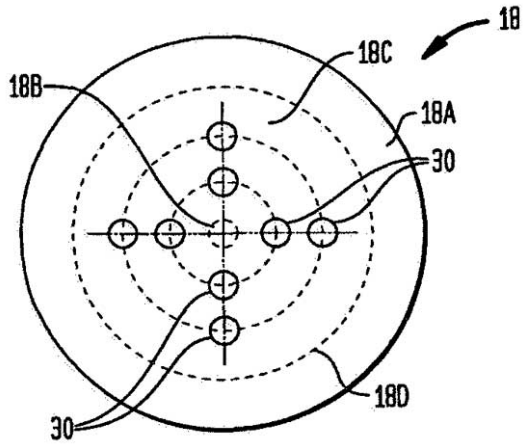
26
METALS AND METALLIC MATERIALS

Includes physical, chemical, and mechanical properties of metals and metallic materials; and metallurgy.

20060050047 NASA Marshall Space Flight Center, Huntsville, AL, USA
Balanced Orifice Plate
Kelley, Anthony R., Inventor; Buskirk, Paul D., Inventor; May 30, 2006; 10 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 19 Dec. 2003; US-Patent-7,051,765; US-Patent-Appl-SN-750628; NASA-Case-MFS-31952-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050047

An orifice plate for use in a conduit through which fluid flows is defined by a central circular region having a radius R, and a ring-shaped region surrounding the central circular region. The ring-shaped region has holes formed therethrough with

those holes centered at each radius R thereof satisfying a relationship A(sub R)=al(X(sub R)V(sub R)(sup b)) where A(sub R) is a sum of areas of those holes having centers at radius R, X(sub R) is a flow coefficient at radius R, V(sub R) is a velocity of the fluid that is to flow through the conduit at radius R, b is a constant selected to make at least one process variable (associated with the fluid that is to flow through the conduit) approximately equal at each radius R, and a is a constant that is equal to (X(sub R)A(sub R)V(sub R)(sup b)) at each radius R.
Official Gazette of the U.S. Patent and Trademark Office
Orifices; Fluid Flow; Flow Coefficients; Pipes (Tubes); Metal Plates

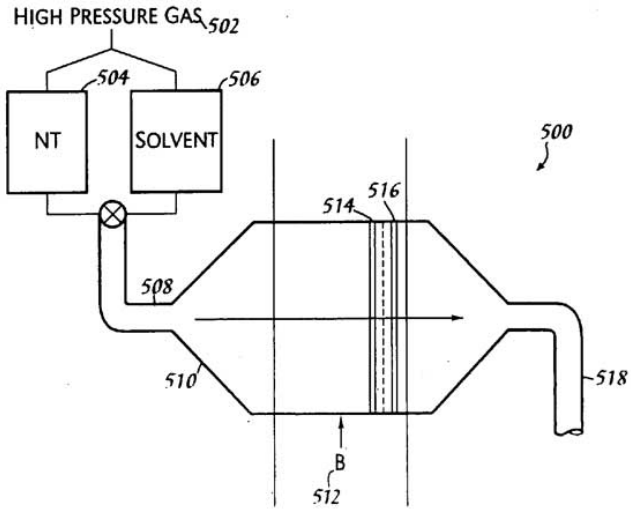


27
NONMETALLIC MATERIALS

Includes physical, chemical, and mechanical properties of plastics, elastomers, lubricants, polymers, textiles, adhesives, and ceramic materials. For composite materials see *24 Composite Materials*.

20070024449 Winstead Sechrest and Minick, P.C., Dallas, TX, USA
Macroscopic Ordered Assembly of Carbon Nanotubes
Richard, Smalley E., Editor; Colbert, Daniel T.; Smith, Kenneth A.; Walters, Deron A.; Casavant, Michael J.; Huffman, Chad B.; Yakobson, Boris I.; Huage, Robert H.; Saini, Rajesh Kumar; Chiang, Wan-Ting; Qin, Xiao Chuan; 4 Aug. 2005; 32 pp.; In English
Contract(s)/Grant(s): NCC9-77; ONR-N00014-99-1-0246
Patent Info.: Filed 16 Jan 2004; US-Patent-Appl-10/759356; US 2005/0169830
Report No.(s): PB2007-102967; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070024449

The present invention is directed to the creation of macroscopic materials and objects comprising aligned nanotube segments. The invention entails aligning single-wall carbon nanotube (SWNT) segments that are suspended in a fluid medium and then removing the aligned segments from suspension in a way that macroscopic, ordered assemblies of SWNT are formed. The invention is further directed to controlling the natural proclivity of nanotube segments to self assemble into ordered structures by modifying the environment of the nanotubes and the history of that environment prior to and during the process. The materials and objects are 'macroscopic' in that they are large enough to be seen without the aid of a microscope or of the dimensions of such objects. These macroscopic, ordered SWNT materials and objects have the remarkable physical, electrical, and chemical properties that SWNT exhibit on the microscopic scale because they are comprised of nanotubes, each of which is aligned in the same direction and in contact with its nearest neighbors. An ordered assembly of closest SWNT also serves as a template for growth of more and larger ordered assemblies. An ordered assembly further serves as a foundation for post processing treatments that modify the assembly internally to specifically enhance selected material properties such as shear strength, tensile strength, compressive strength, toughness, electrical conductivity, and thermal conductivity.
Author
Carbon Nanotubes; Walls; Nanotechnology; Shear Strength; Fullerenes



20070025073 NASA Langley Research Center, Hampton, VA USA

Space Environmentally Durable Polymides and Copolyimides

Connell, John W., Editor; Smith, John G., Jr., Editor; Hergenrother, PaulM., Editor; Watson, Kent A., Editor; Thompson, Craig M., Editor; 23 Jun. 2005; 79 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 8 Nov. 2004; US-Patent-Appl-10/988407; US 2005/0137383

Report No.(s): PB2007-103145; No Copyright; Avail: CASI; A05, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025073

Polyimides displaying low color in thin films, atomic oxygen resistance, vacuum ultraviolet radiation resistance, solubility in organic solvents in the imide form, high glass transition (T.sub.g) temperatures, and high thermal stability are provided. The poly(amide acid)s, copoly(amide acid)s, polyimides and copolyimides are prepared by the reaction of stoichiometric ratios of an aromatic dianhydride with diamines which contain phenylphosphine oxide groups in polar aprotic solvents. Controlled molecular weight oligomeric (amide acid)s and imides can be prepared by offsetting the stoichiometry according to the Carothers equation using excess diamine and endcapping with aromatic anhydrides The polyimide materials can be processed into various material forms such as thin films, fibers, foams, threads, adhesive film, coatings, dry powders, and fiber coated prepreg, and uses include thin film membranes on antennas, second-surface mirrors, thermal optical coatings, and multi-layer thermal insulation (MLI) blanket materials.

Author

Durability; Polyimides; Thin Films; Spacecraft Construction Materials; Aerospace Environments

20070025075 Black Lowe and Graham, PLLC, Seattle, WA, USA

Multifunctional Cryo-Insulation Apparatus and Methods

Eichinger, Jeffrey D., Inventor; Weiser, Erik S., Inventor; Slenk, Joel E., Inventor; Pater, Ruth H., Inventor; 23 Jun. 2005; 13 pp.; In English; Original contains black and white illustrations

Contract(s)/Grant(s): NAS8-01099

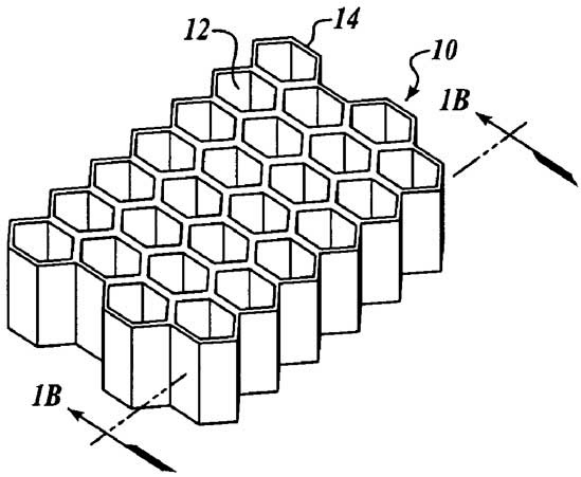
Patent Info.: Filed 25 Aug. 2004; US-Patent-Appl-10/926569; US 2005/0136239

Report No.(s): PB2007-103117; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025075

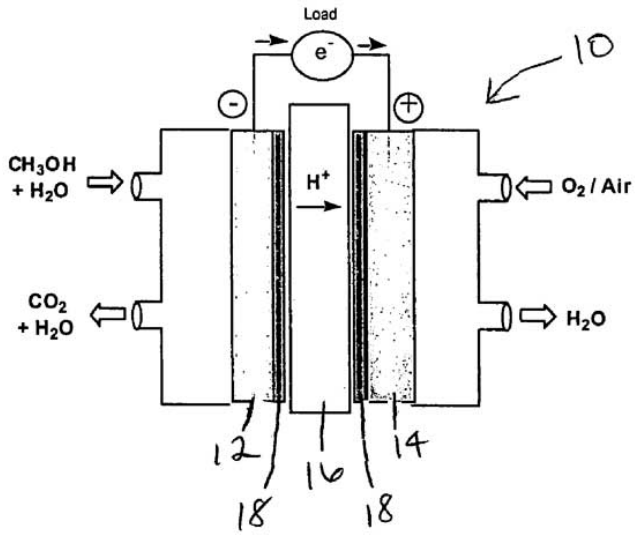
Apparatus and methods for multi-layer foam structures are disclosed. In one embodiment, a method includes filling a first portion of a receptacle with a removable filler. A second portion of the receptacle is filled with a first foam forming a first foam layer. The removeable filler is removed, and at least part of the first portion of the receptacle is filled with a second foam, forming a second foam layer. The first foam may include a polyimide foam, and the second foam may include a polyurethane

foam. Other aspects of the invention include a skin attached to the receptacle and the first foam. In other embodiments, hexagonal honeycomb matrix may be used as a receptacle for the first foam and the second foam.
Author
Cryogenics; Insulation; Propellant Tanks; Foams



20070025469 Cristie, Parker and Hale, LLP, Pasadena, CA, USA
Perfluoroalkanesulfornic Acides and Perfluoroalkanesulfonimides as Electrode Additives for Fuel Cells
Narayanan, Sekharipuram, R., Inventor; Smart, Marshall C., Inventor; Surampudi, Subbarao, Inventor; Surya-Prakash, G. K., Inventor; Wang, Qun-jie, Inventor; Olah, George A., Inventor; 29 Sep. 2005; 17 pp.; In English; Original contains black and white illustrations
Contract(s)/Grant(s): NAS7-1407
Patent Info.: Filed 1 Oct. 2004; US-Patent-Appl-10/956835; US 2005/0214629
Report No.(s): PB2007-105814; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070025469

Coating materials for coating the electrodes of a fuel cell are disclosed. In one embodiment, the coating materials comprise perfluoroalkanesulfonic acids having the general formula F(sub 3)C--(CF(sub 2))(sub n)--SO(sub 3)H, wherein n ranges from 8 to 17. In another embodiment, the coating materials comprise perfluoroalkanesulfonimides having the general formula C(sub n)F(sub 2n+1)SO(sub 2)NHO(sub 2)SF(sub 2m+1)C(sub m), wherein the sum of m and n ranges from 8 to 17. These long chain sulfonic acids and imides impart improved electrode performance and decrease polarization.
Official Gazette of the U.S. Patent and Trademark Office
Additives; Electrodes; Fuel Cells; Methyl Alcohol; Coatings

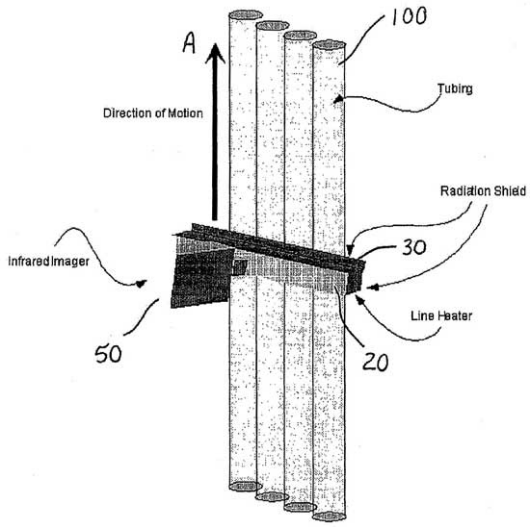


31
ENGINEERING (GENERAL)

Includes general research topics related to engineering and applied physics, and particular areas of vacuum technology, industrial engineering, cryogenics, and fire prevention. For specific topics in engineering see *categories 32 through 39*.

20060049128 NASA Langley Research Center, Hampton, VA, USA
Method and Apparatus for the Portable Identification Of Material Thickness And Defects Along Uneven Surfaces Using Spatially Controlled Heat Application
Reilly, Thomas L., Inventor; Jacobstein, A. Ronald, Inventor; Cramer, K. Elliott, Inventor; June 13, 2006; 10 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 10 Apr. 2003; US-Patent-7,060,991; US-Patent-Appl-SN-410605; US-Patent-Appl-SN-373341; NASA-Case-LAR-16326-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060049128

A method and apparatus for testing a material such as the water-wall tubes in boilers includes the use of a portable thermal line heater having radiation shields to control the amount of thermal radiation that reaches a thermal imager. A procedure corrects for variations in the initial temperature of the material being inspected. A method of calibrating the testing device to determine an equation relating thickness of the material to temperatures created by the thermal line heater uses empirical data derived from tests performed on test specimens for each material type, geometry, density, specific heat, speed at which the line heater is moved across the material and heat intensity.
Official Gazette of the U.S. Patent and Trademark Office
Thickness; Specific Heat; Defects; Walls; Boilers; Calibrating



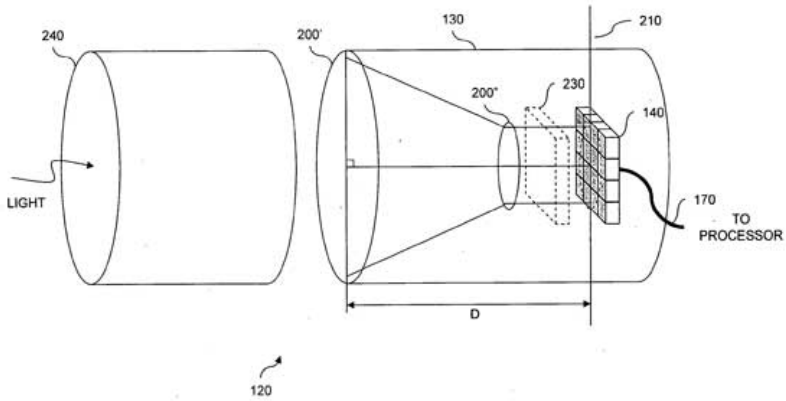
32
COMMUNICATIONS AND RADAR

Includes radar; radio, wire, and optical communications; land and global communications; communications theory. For related information see also 04 Aircraft Communications and Navigation; and *17 Space Communications, Spacecraft Communications, Command and Tracking*; for search and rescue, see *03 Air Transportation and Safety*; and *16 Space Transportation and Safety*.

20070021327 Massachusetts Inst. of Tech., Cambridge, MA, USA
Lincoln Distributed Optical Receiver Array
Bondurant, R. S., Inventor; Boroson, D. M., Inventor; Murphy, D. V., Inventor; 4 Aug. 2005; 18 pp.; In English
Contract(s)/Grant(s): F19628-00-C-0002
Patent Info.: Filed Filed 30 Jan. 2004; US-Patent-Appl-SN-10-768395
Report No.(s): PB2007-102959; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070021327

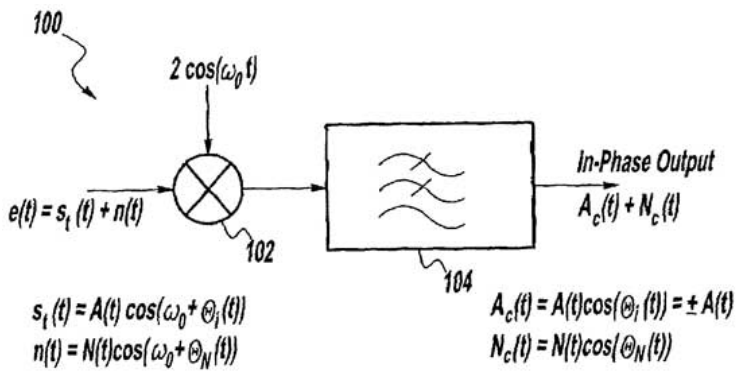
An array of spatially-separated optical detectors is configured to receive a free-space optical communication signal from a remote source. Each optical detector of the array includes an optical system and an array of light sensors. The optical system collects a portion of light received from the remote source and directs it toward the array of light sensors. The array of light

sensors, in turn, converts the collected portion of light to one or more electrical, detected signals corresponding to the collected portion of light. A processor is coupled to the array of spatially-separated optical detectors, receiving the detected signals and combining the received signals to obtain information borne by the received optical communication signal.
Author
Receivers; Free-Space Optical Communication; Space Communication; Satellite Communication



20070023394 NASA Glenn Research Center, Cleveland, OH, USA
Real-time Signal-to-noise Ratio (SNR) Estimation for BPSK and QPSK Modulation Using the Active Communications Channel
Manning, Robert M., Inventor; March 13, 2007; 15 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 21 Oct. 2002; US-Patent-7,190,741; US-Patent-Appl-SN-274756; NASA-Case-LEW-16901-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023394

Method and apparatus for estimating signal-to-noise ratio (SNR) gamma of a composite input signal e(t) on a phase modulated (e.g., BPSK) communications link. A first demodulator receives the composite input signal and a stable carrier signal and outputs an in-phase output signal; a second demodulator receives the composite input signal and a phase-shifted version of the carrier signal and outputs a quadrature-phase output signal; and phase error theta(sub E)(t) contained within the composite input signal e(t) is calculated from the outputs of the first and second demodulators. A time series of statistically independent phase error measurements theta(sub E)(t(sub 1)), theta (sub E)(t(sub 2)),..., theta (sub E)(t(sub k)) is obtained from the composite input signal subtending a time interval delta t = t(sub k) - t(sub 1) whose value is small enough such that gamma(t) and sigma(t) can be taken to be constant in delta t. A biased estimate gamma(sup *) for the signal-to-noise ratio (SNR) gamma if the composite input signal is calculated using maximum likelihood (ML) estimation techniques, and an unbiased estimate gamma(sup ^) for the signal-to-noise ratio (SNR) gamma of the composite input signal is determined from the biased estimate gamma(sup *), such as by use of a look-up table.
Official Gazette of the U.S. Patent and Trademark Office
Binary Phase Shift Keying; Communication Networks; Phase Modulation; Signal to Noise Ratios; Channels (Data Transmission); Quadrature Phase Shift Keying



33
ELECTRONICS AND ELECTRICAL ENGINEERING

Includes development, performance, and maintainability of electrical/electronic devices and components; related test equipment; and microelectronics and integrated circuitry. for related information see also *60 Computer Operations and Hardware*; and *76 Solid-State Physics*. For communications equipment and devices see *32 Communications and Radar*.

20060048505 NASA Langley Research Center, Hampton, VA, USA

Flexible Framework for Capacitive Sensing

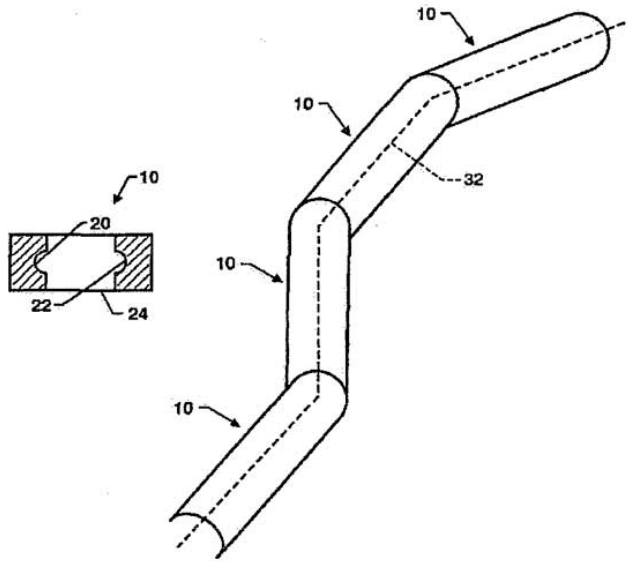
Woodard, Stanley E., Inventor; Taylor, Bryant D., Inventor; May 23, 2006; 7 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 8 Aug. 2005; US-Patent-7,047,807; US-Patent-Appl-SN-203583; US-Patent-Appl-SN-609510; NASA-Case-LAR-16974-1; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060048505

A flexible framework supports electrically-conductive elements in a capacitive sensing arrangement. Identical frames are arranged end-to-end with adjacent frames being capable of rotational movement there between. Each frame has first and second passages extending therethrough and parallel to one another. Each of the first and second passages is adapted to receive an electrically-conductive element therethrough. Each frame further has a hollowed-out portion for the passage of a fluent material therethrough. The hollowed-out portion is sized and shaped to provide for capacitive sensing along a defined region between the electrically-conductive element in the first passage and the electrically-conductive element in the second passage. Official Gazette of the U.S. Patent and Trademark Office

Capacitance; Detection; Electrical Resistivity; Electrical Engineering



20060050043 NASA Ames Research Center, Moffett Field, CA, USA

Carbon Nanotube Interconnect

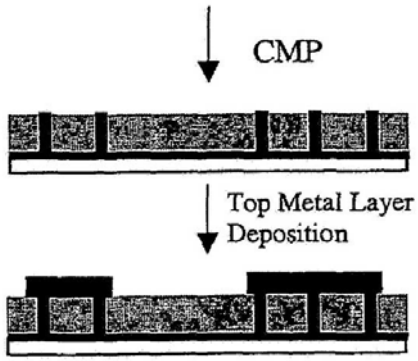
Li, Jun, Inventor; Meyyappan, Meyya, Inventor; August 22, 2006; 12 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 11 Mar. 2003; US-Patent-7,094,679; US-Patent-Appl-SN-390254; NASA-Case-ARC-15042-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060050043

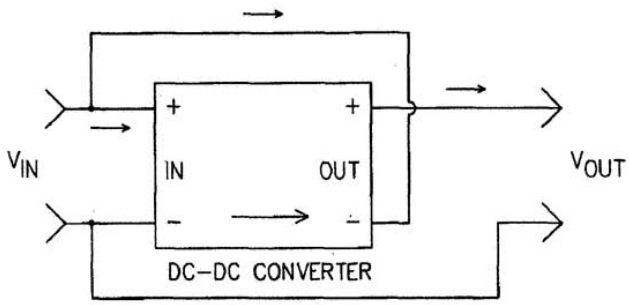
Method and system for fabricating an electrical interconnect capable of supporting very high current densities (10(exp 6)-10(exp 10) Amps/sq cm), using an array of one or more carbon nanotubes (CNTs). The CNT array is grown in a selected spaced apart pattern, preferably with multi-wall CNTs, and a selected insulating material, such as SiOw, or SiuNv is deposited

using CVD to encapsulate each CNT in the array. An exposed surface of the insulating material is planarized to provide one or more exposed electrical contacts for one or more CNTs.
Official Gazette of the U.S. Patent and Trademark Office
Fabrication; Carbon Nanotubes; Current Density; High Current; Encapsulating



20060050045 NASA Glenn Research Center, Cleveland, OH, USA
Series Connected Buck-Boost Regulator
Birchenough, Arthur G., Inventor; May 09, 2006; 13 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 28 Jul. 2003; US-Patent-7,042,199; US-Patent-Appl-SN-629875; NASA-Case-LEW-17,353-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050045

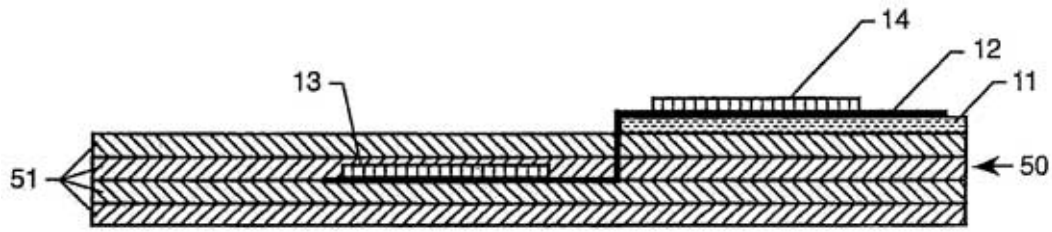
A Series Connected Buck-Boost Regulator (SCBBR) that switches only a fraction of the input power, resulting in relatively high efficiencies. The SCBBR has multiple operating modes including a buck, a boost, and a current limiting mode, so that an output voltage of the SCBBR ranges from below the source voltage to above the source voltage.
Official Gazette of the U.S. Patent and Trademark Office
Regulators; Electric Potential; Switches; Efficiency



20060050049 NASA Langley Research Center, Hampton, VA, USA
Magnetic Field Response Sensor For Conductive Media
Woddard, Stanley E., Inventor; Taylor, Bryant D., Inventor; July 11, 2006; 9 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 30 Apr. 2004; US-Patent-7,075,295; US-Patent-Appl-SN-839448; US-Patent-Appl-SN-467841; NASA-Case-LAR-16571-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050049

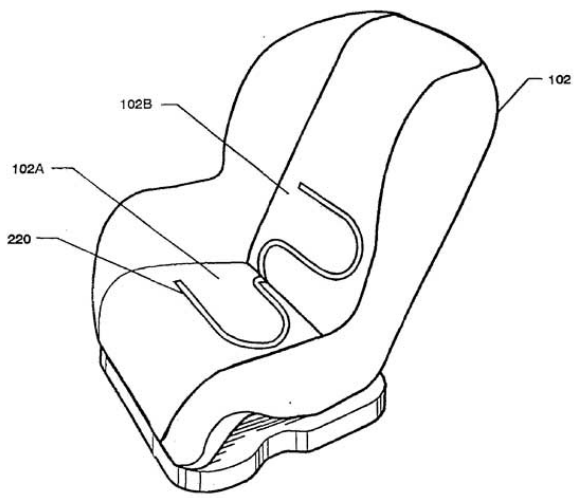
A magnetic field response sensor comprises an inductor placed at a fixed separation distance from a conductive surface to address the low RF transmissivity of conductive surfaces. The minimum distance for separation is determined by the sensor response. The inductor should be separated from the conductive surface so that the response amplitude exceeds noise level

by a recommended 10 dB. An embodiment for closed cavity measurements comprises a capacitor internal to said cavity and an inductor mounted external to the cavity and at a fixed distance from the cavity s wall. An additional embodiment includes a closed cavity configuration wherein multiple sensors and corresponding antenna are positioned inside the cavity, with the antenna and inductors maintained at a fixed distance from the cavity s wall.
Official Gazette of the U.S. Patent and Trademark Office
Magnetic Fields; Inductors; Transmissivity; Radio Frequencies; Capacitors



20060050055 NASA Langley Research Center, Hampton, VA, USA
Self-activating System and Method for Alerting When an Object or a Person is Left Unattended
Edwards, William C., Inventor; Mack, Terry L., Inventor; Modlin, Edward A., Inventor; September 12, 2006; 22 pp.; In English; Original contains color and black and white illustrations
Patent Info.: Filed 20 Feb. 2004; US-Patent-7,106,203; US-Patent-Appl-SN-783486; NASA-Case-LAR-16324-2; US-Patent-Appl-SN-011229; US-Patent-Appl-SN-6714132; US-Patent-Appl-SN-329692; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050055

A system and method use a wireless tether comprising a transmitter and a receiver to alert a caregiver that an object has been left unattended. A detector senses the presence of the object, usually a child, located in a position such as a safety seat. The detector is operatively coupled to the transmitter. which is located near the object. The transmitter transmits at least one wireless signal when the object is in the position. The receiver, which is remotely located from the transmitter, senses at least one signal as long as the receiver is within a prescribed range of transmission. By performing a timing function, the receiver monitors the proximity of the caregiver, who maintains possession of the receiver, to the transmitter. The system communicates an alarm to the caregiver when the caregiver ventures outside the range of transmission without having removed the object from the position.
Author
Warning Systems; Transmitter Receivers; Sensory Perception; Tethering; Timing Devices



20060050108 NASA Langley Research Center, Hampton, VA, USA
Magnetic Field Response Measurement Acquisition System
Woodard, Stanley E., Inventor; Taylor, Bryant D., Inventor; Shams, Qamar A., Inventor; Fox, Robert L., Inventor; Fox, Christopher L., Inventor; Fox, Melanie L., Inventor; Bryant, Robert G., Inventor; August 08, 2006; 53 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 30 Apr. 2004; US-Patent-7,086,593; US-Patent-Appl-SN-839445; NASA-CASE-LAR-16908-1; US-Patent-Appl-SN-467194; US-Patent-Appl-SN-467112; US-Patent-Appl-SN-467841; US-Patent-Appl-SN-467842; US-Patent-Appl-SN-467839; No Copyright; Avail: CASI; A04, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050108

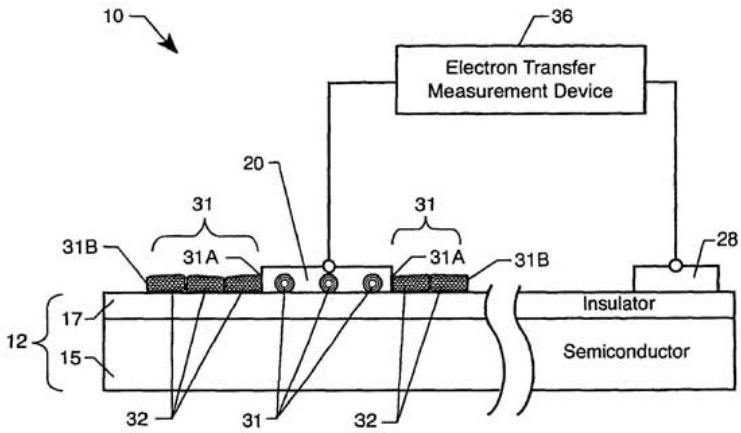
Magnetic field response sensors designed as passive inductor-capacitor circuits produce magnetic field responses whose harmonic frequencies correspond to states of physical properties for which the sensors measure. Power to the sensing element is acquired using Faraday induction. A radio frequency antenna produces the time varying magnetic field used for powering the sensor, as well as receiving the magnetic field response of the sensor. An interrogation architecture for discerning changes in sensor s response kequency, resistance and amplitude is integral to the method thus enabling a variety of measurements. Multiple sensors can be interrogated using this method, thus eliminating the need to have a data acquisition channel dedicated to each sensor. The method does not require the sensors to be in proximity to any form of acquisition hardware. A vast array of sensors can be used as interchangeable parts in an overall sensing system.
Official Gazette of the U.S. Patent and Trademark Office
Data Acquisition; Magnetic Fields; Sensors; Electrical Engineering

20070002603 NASA Goddard Space Flight Center, Greenbelt, MD, USA
Charge Dissipative Electrical Interconnect
Kolasinski, J. R.; Wollack, E. J.; 23 May 05; 10 pp.; In English
Patent Info.: Filed Filed 23 May 05; US-Patent-Appl-SN-11-136-766
Report No.(s): PB2007-103798; No Copyright; Avail: CASI; A02, Hardcopy

A charge-dissipative electrical interconnect comprises at least one first conductive element, a first lossy dielectric layer surrounding the at least one first conductive element, a first shielding element surrounding the first lossy dielectric layer, at least one grounding conductive element electrically contacting the first shielding element, and a second lossy dielectric layer surrounding the first shielding element.
NTIS
Dissipation; Electric Contacts; Patent Applications

20070003566 NASA Langley Research Center, Hampton, VA, USA
Carbon Nanotube Based Light Sensor
Wincheski, russell A., Inventor; Smits, Jan M., Inventor; Jordan, Jeffrey D., Inventor; Watkins, Anthony Neal, Inventor; Ingram, JoAnne L., Inventor; October 31, 2006; 14 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 10 Sep. 2004; US-Patent-7,129,467; US-Patent-Appl-SN-943831; NASA-Case-LAR-16573-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070003566

A light sensor substrate comprises a base made from a semi-conductive material and topped with a layer of an electrically non-conductive material. A first electrode and a plurality of carbon nanotube (CNT)-based conductors are positioned on the layer of electrically non-conductive material with the CNT-based conductors being distributed in a spaced apart fashion about a periphery of the first electrode. Each CNT-based conductor is coupled on one end thereof to the first electrode and extends away from the first electrode to terminate at a second free end. A second or gate electrode is positioned on the non-conductive material layer and is spaced apart from the second free end of each CNT-based conductor. Coupled to the first and second electrode is a device for detecting electron transfer along the CNT-based conductors resulting from light impinging on the CNT-based conductors.
Official Gazette of the U.S. Patent and Trademark Office
Carbon Nanotubes; Sensors; Substrates; Light (Visible Radiation)



20070004779 NASA Glenn Research Center, Cleveland, OH, USA

Series Connected Buck-Boost Regulator

Birchenough, Arthur G., Inventor; October 03, 2006; 12 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 25 Jul. 2005; US-Patent-7,116,568; US-Patent-Appl-SN-188962; US-Patent-Appl-SN-629875;

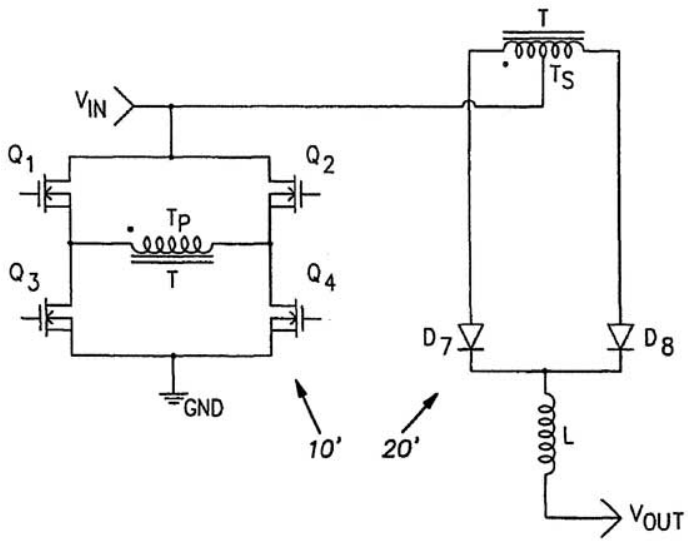
NASA-Case-LEW-17353-2; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070004779

A Series Connected Buck-Boost Regulator (SCBBR) that switches only a fraction of the input power, resulting in relatively high efficiencies. The SCBBR has multiple operating modes including a buck, a boost, and a current limiting mode, so that an output voltage of the SCBBR ranges from below the source voltage to above the source voltage.

Official Gazette of the U.S. Patent and Trademark Office

Regulators; Electric Connectors; Acceleration (Physics); Electrical Engineering



20070005015 Nixon and Vanderhye, P.C., Arlington, VA, USA

Mesoporous Silicon Infrared Filters and Methods of Making Same

Christophersen, M.; Kochergin, V.; Swinehart, P. R.; 27 May 05; 20 pp.; In English

Contract(s)/Grant(s): NASA-NNC04CA21C

Patent Info.: Filed Filed 27 May 05; US-Patent-Appl-SN-11-138-672

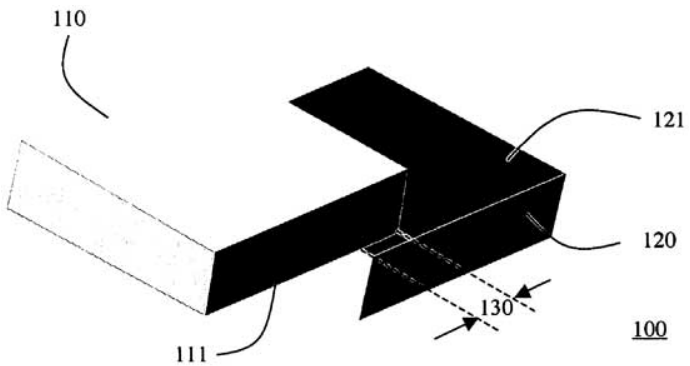
Report No.(s): PB2007-103885; No Copyright; Avail: CASI; A03, Hardcopy

Mesoporous silicon optical filters can be used to filter light in the near infrared, mid infrared and/or far infrared spectral ranges. The special advantages of mesoporous filters in cold temperature applications include improved mechanical stability,

absence of delamination problems, manufacturability, and transparency of the mesoporous silicon material throughout a wide spectral range. Techniques are disclosed for enhancing the transparency range and environmental and mechanical stabilities of the mesoporous silicon filters.
NTIS
Infrared Filters; Silicon; Mechanical Properties

20070013878 Lumen Intellectual Property, Palo Alto, CA, USA
Superconductive Contacts with Hydroxide-catalyzed Bonds that Retain Superconductivity and Provide Mechanical Fastening Strength
Mester, J.; Gwo, D.; June 23, 2005; 10 pp.; In English
Contract(s)/Grant(s): NAS8-39225
Patent Info.: Filed Filed 21 May 04; US-Patent-Appl-SN-10-850 857
Report No.(s): PB2007-103140; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070013878

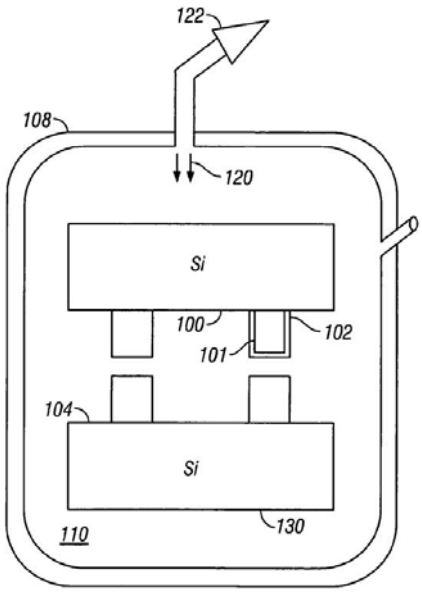
A superconductive contact or contact structure composed mainly of superconductors and a hydroxide-catalyzed bond that establishes electrical contacts, retains superconductivity, and provides the full mechanical fastening strength between the superconductors. According to the present invention, the superconductive contact structure exhibits a single-film superconductive behavior. In some embodiments, the structure has a configuration of two metallic low critical-temperature (low-T.sub.c) superconductors, such as niobium (Nb), connectorized by an essentially transparent and extremely thin hydroxide-catalyzed bond. In some embodiments, two ceramic high critical-temperature (high-T.sub.c) superconductors, such as perovskite ceramics (e.g., YBa.sub.2Cu.sub.3O.sub.7 or YBCO in general) are joined via a hydroxide-catalyzed bond. In some embodiments, a metallic low-T.sub.c superconductor and a ceramic high-T.sub.c superconductor is connectorized via a hydroxide-catalyzed bond.
Author
Bonding; Catalysis; Fasteners; Hydroxides; Superconductivity



20070016650 Fish and Richardson, Minneapolis, MN, USA
Microwave Bonding of MEMS Component
Barmatz, M. B., Inventor; Mai, J. D., Inventor; Jackson, H. W., Inventor; Budraa, N. K., Inventor; Pike, W. T., Inventor; February 9, 2006; 7 pp.; In English
Contract(s)/Grant(s): NAS7-1407
Patent Info.: Filed 14 Jun. 05; US-Patent-Appl-SN-153248; US-Patent-Appl-SN-198656; US-Patent-Appl-SN-130842
Report No.(s): PB2007-103887; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070016650

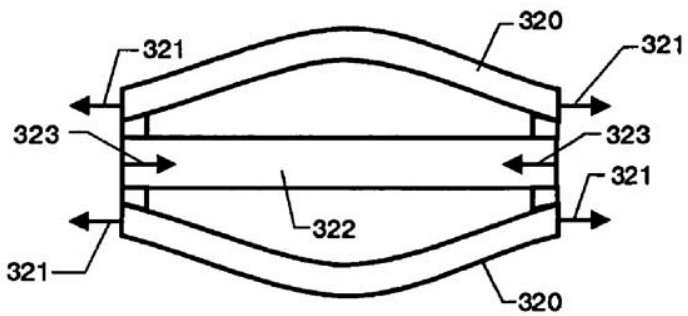
Bonding of MEMs materials is carried out using microwave. High microwave absorbing films are placed within a

microwave cavity, and excited to cause selective heating in the skin of the material. This causes heating in one place more than another. Thereby minimizing the effects of the bonding microwave energy.
Author
Bonding; Microelectromechanical Systems; Microwaves



20070017359 NASA Langley Research Center, Hampton, VA USA
Hybrid Elecromechanical Actuator and Actuation System
Su, J., Inventor; Xu, T. B., Inventor; Sep. 7, 2006; 10 pp.; In English
Patent Info.: Filed Filed 4 Mar 05; US-Patent-Appl-SN-11-076-824
Report No.(s): PB2007-101687; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070017359

A hybrid electromechanical actuator has two different types of electromechanical elements, one that expands in a transverse direction when electric power is applied thereto and one that contracts in a transverse direction when electric power is applied thereto. The two electromechanical elements are (1) disposed in relation to one another such that the transverse directions thereof are parallel to one another, and (2) mechanically coupled to one another at least at two opposing edges thereof. Electric power is applied simultaneously to the elements.
Official Gazette of the U.S. Patent and Trademark Office
Actuators; Electromechanical Devices



20070017399 Morris (Duane), LLP, Harrisburg, PA, USA

Charge Dissipative Dielectric for Cryogenic Devices

Canton, R. H., Inventor; Hall, J. A., Inventor; May 19, 2005; 11 pp.; In English

Contract(s)/Grant(s): NAS5-00236; NAS5-00237

Patent Info.: Filed 20 Oct. 2004; US-Patent-Appl-SN-970539; US-Patent-Appl-SN-513747

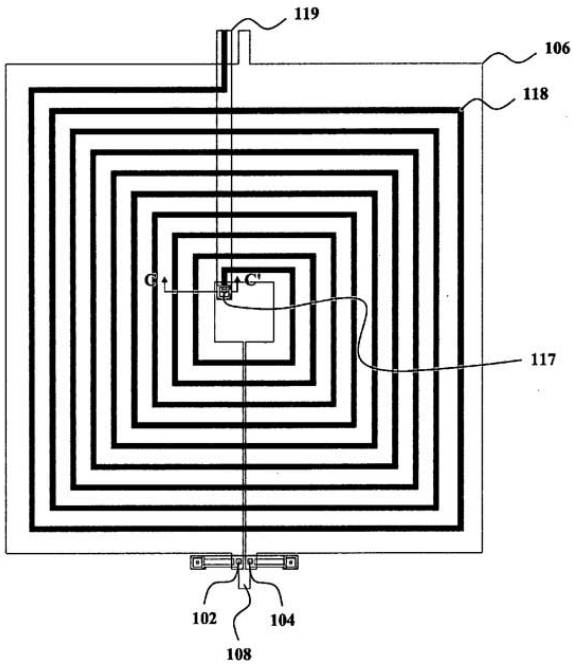
Report No.(s): PB2007-101574; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070017399

A Superconducting Quantum Interference Device (SQUID) is disclosed comprising a pair of resistively shunted Josephson junctions connected in parallel within a superconducting loop and biased by an external direct current (dc) source. The SQUID comprises a semiconductor substrate and at least one superconducting layer. The metal layer(s) are separated by or covered with a semiconductor material layer having the properties of a conductor at room temperature and the properties of an insulator at operating temperatures (generally less than 100 Kelvin). The properties of the semiconductor material layer greatly reduces the risk of electrostatic discharge that can damage the device during normal handling of the device at room temperature, while still providing the insulating properties desired to allow normal functioning of the device at its operating temperature. A method of manufacturing the SQUID device is also disclosed.

Author

SQUID (Detectors); Superconductivity; Josephson Junctions; Thin Films; Cryogenics



20070017859 Senterfitt (Akerman), West Palm Beach, FL, USA

Time-Mode Analog Computation Circuits and Methods

Ravinuthula, V. V., Inventor; Harris, J. G., Inventor; Fortes, J. A. B., Inventor; October 20, 2005; 20 pp.; In English

Contract(s)/Grant(s): NCC2-1363; NSF EIA-01-35946

Patent Info.: Filed 12 Apr. 2005; US-Patent-Appl-SN-104141; US-Patent-Appl-SN-561354

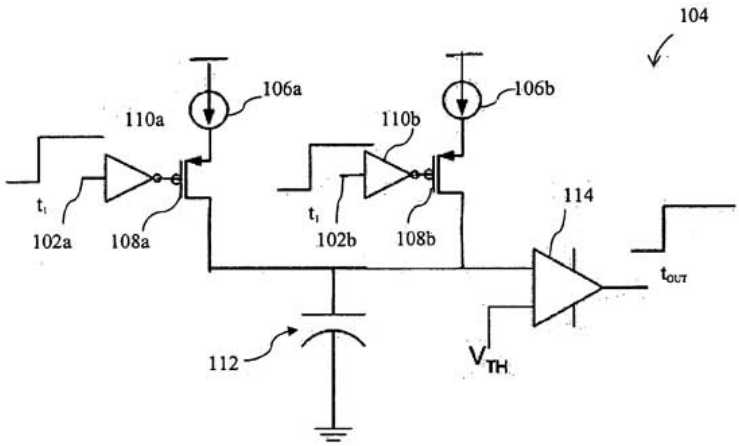
Report No.(s): PB2007-105971; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070017859

A time-mode analog computation circuit is provided. The time-mode analog computation circuit includes one or more inputs for receiving one or more temporal input signals. The time-mode analog computation circuit further includes circuitry for performing a mathematical operation based on the one or more temporal input signals. A result of the mathematical operation is expressed in a timing of an output signal generated by the circuit.

Author

Analog Circuits; Signal Processing



20070023391 NASA Pasadena Office, CA, USA

Evolutionary Technique for Automated Synthesis of Electronic Circuits

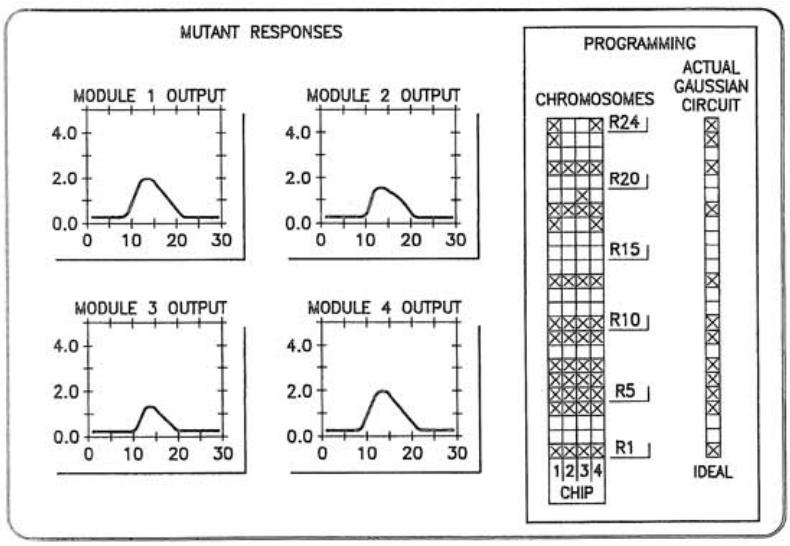
Stoica, Adrian, Inventor; Salazar-Lazaro, Carlos Harold, Inventor; February 27, 2007; 12 pp.; In English; Original contains black and white illustrations; US-Patent- 7,184,943; NASA-Case-NPO-20535-2; US-Patent-Appl-SN-768754; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023391

An evolvable circuit includes a plurality of reconfigurable switches, a plurality of transistors within a region of the circuit, the plurality of transistors having terminals, the plurality of transistors being coupled between a power source terminal and a power sink terminal so as to be capable of admitting power between the power source terminal and the power sink terminal, the plurality of transistors being coupled so that every transistor to transistor terminal coupling within the region of the circuit comprises a reconfigurable switch.

Official Gazette of the U.S. Patent and Trademark Office

Circuits; Automatic Control; Electronics; Synthesis



20070023396 NASA Langley Research Center, Hampton, VA, USA

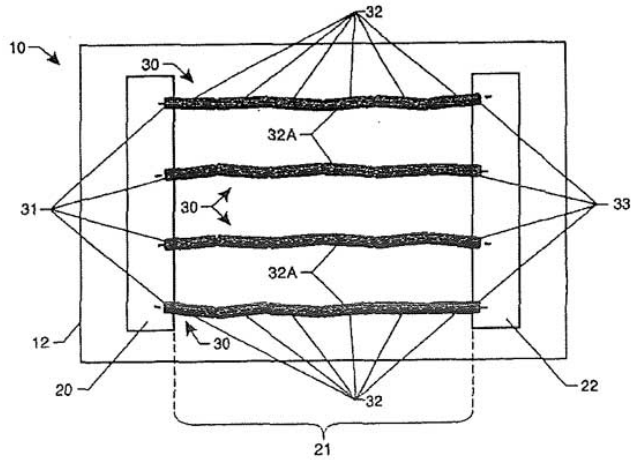
Carbon Nanotube-based Sensor and Method for Continually Sensing Changes in a Structure

Jordan, Jeffry D., Inventor; Watkins, Anthony Neal, Inventor; Oglesby, Donald M., Inventor; Ingram, JoAnne L., Inventor; March 27, 2007; 10 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 13 Jul. 2004; US-Patent-7,194,912; US-Patent-Appl-SN-890843; NASA-Case-LAR-16475-1; No Copyright; Avail: CASI; A02, Hardcopy

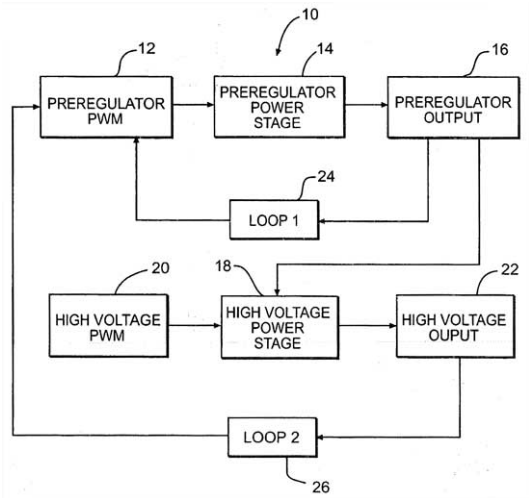
ONLINE: http://hdl.handle.net/2060/20070023396

A sensor has a plurality of carbon nanotube (CNT)-based conductors operatively positioned on a substrate. The conductors are arranged side-by-side, such as in a substantially parallel relationship to one another. At least one pair of spaced-apart electrodes is coupled to opposing ends of the conductors. A portion of each of the conductors spanning between each pair of electrodes comprises a plurality of carbon nanotubes arranged end-to-end and substantially aligned along an axis. Because a direct correlation exists between resistance of a carbon nanotube and carbon nanotube strain, changes experienced by the portion of the structure to which the sensor is coupled induce a change in electrical properties of the conductors.
Official Gazette of the U.S. Patent and Trademark Office
Carbon Nanotubes; Sensors; Methodology; Electric Conductors



20070023417 NASA Marshall Space Flight Center, Huntsville, AL, USA
Low Power, High Voltage Power Supply with Fast Rise/Fall Time
Bearden, Douglas B., Inventor; February 13, 2007; 6 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 10 Mar. 2006; US-Patent-7,1777,164; US-Patent-Appl-SN-376632; NASA-Case-MFS-32137-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023417

A low power, high voltage power supply system includes a high voltage power supply stage and a preregulator for programming the power supply stage so as to produce an output voltage which is a predetermined fraction of a desired voltage level. The power supply stage includes a high voltage, voltage doubler stage connected to receive the output voltage from the preregulator and for, when activated, providing amplification of the output voltage to the desired voltage level. A first feedback loop is connected between the output of the preregulator and an input of the preregulator while a second feedback loop is connected between the output of the power supply stage and the input of the preregulator.
Official Gazette of the U.S. Patent and Trademark Office
High Voltages; Low Voltage; Power Supplies; Voltage Regulators



20070023486 NASA Langley Research Center, Hampton, VA, USA

Device and Method for Connections Made Between a Crimp Connector and Wire

Yost, William T., Inventor; Cramer, K. Elliott, Inventor; Perey, Daniel F., Inventor; February 27, 2007; 21 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 9 Sep. 2004; US-Patent-7,181,942; US-Patent-Appl-SN-943649; US-Patent-Appl-SN-550740;

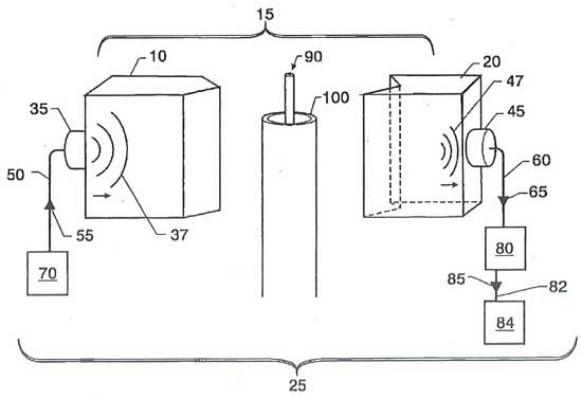
NASA-Case-LAR-16575-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023486

An ultrasonic device and method obtains desirable crimp connections between a crimp connector and a wire, or bundle of wires, by assessing the desirability of connections made in a wire-to-wire connection and in other situations where two materials with good acoustic propagation characteristics are joined together via deformation. An embodiment of the device as a crimping tool comprises a compressing means, pulse-generating circuitry. at least one ultrasonic transmitting transducer, at least one ultrasonic receiving transducer, receiving circuitry, and a display. The user may return to a previously crimped connection and assess the desirability of the connection by compressing the device about the connection, sending an acoustic signal through the crimp, andco111paring the received signal to a signal obtained from known desirable connections.

Author

Connectors; Folding; Ultrasonics; Wire; Tools



20070023682 NASA Ames Research Center, Moffett Field, CA, USA

Metallic Nanowire Interconnections for Integrated Circuit Fabrication

Ng, Hou Tee, Inventor; Li, Jun, Inventor; Meyyappan, Meyya, Inventor; 15 May 2007; 10 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 24 Mar. 2004; US-Patent-7,217,650; US-Patent-Appl-10/816576; US-Patent-appl-10/390254;

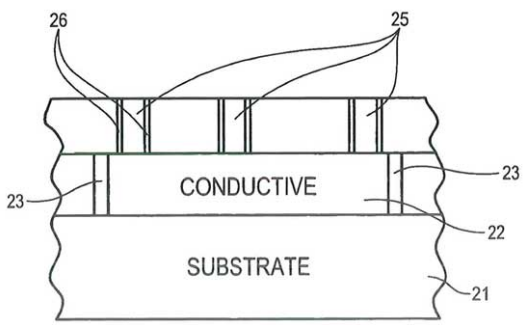
NASA-Case-ARC-15042-2; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023682

A method for fabricating an electrical interconnect between two or more electrical components. A conductive layer is provided on a substarte and a thin, patterned catalyst array is deposited on an exposed surface of the conductive layer. A gas or vapor of a metallic precursor of a metal nanowire (MeNW) is provided around the catalyst array, and MeNWs grow between the conductive layer and the catalyst array. The catalyst array and a portion of each of the MeNWs are removed to provide exposed ends of the MeNWs.

Author

Catalysts; Integrated Circuits; Nanowires; Nanotechnology; Nanofabrication; Metals; Insulation



34
FLUID MECHANICS AND THERMODYNAMICS

Includes fluid dynamics and kinematics and all forms of heat transfer; boundary layer flow; hydrodynamics; hydraulics; fluidics; mass transfer and ablation cooling. For related information see also *02 Aerodynamics*.

20070012726 Illinois Univ., Urbana-Champaign, IL, USA
Microscale Out-Of-Plane Anemometer
Liu, C.; Chen, J.; 17 Jan 03; 16 pp.; In English
Contract(s)/Grant(s): NSF IIS-0080639; NSF IIS 99-84954
Patent Info.: Filed Filed 17 Jan 03; US-Patent-Appl-SN-10-346-565
Report No.(s): PB2007-101592; No Copyright; Avail: CASI; A03, Hardcopy

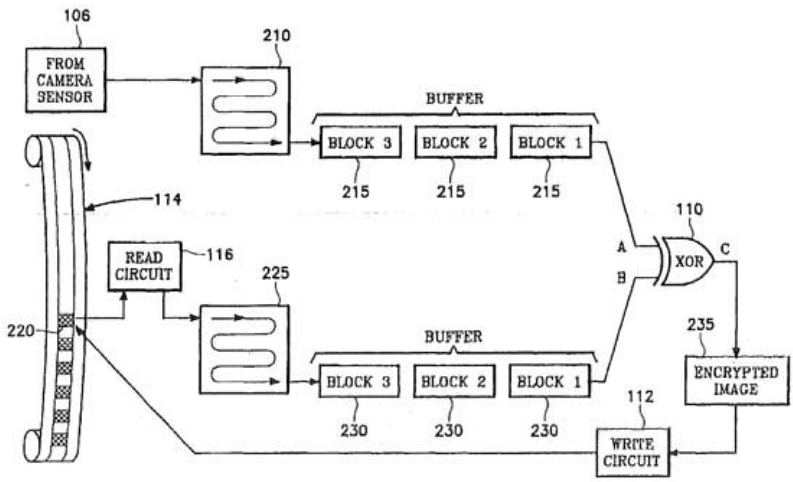
A resistive heater is suspended over a substrate by supports raised with respect to the substrate to provide a clearance underneath the resistive heater for fluid flow. A preferred fabrication process for the thermal sensor uses surface micromachining and a three-dimensional assembly to raise the supports and lift the resistive heater over the substrate.
NTIS
Anemometers; Micromachining; Fabrication

35
INSTRUMENTATION AND PHOTOGRAPHY

Includes remote sensors; measuring instruments and gages; detectors; cameras and photographic supplies; and holography. For aerial photography see *43 Earth Resources and Remote Sensing*. For related information see also *06 Avionics and Aircraft Instrumentation*; and *19 Spacecraft Instrumentation and Astrionics*.

20070023432 Jet Propulsion Lab., California Inst. of Tech., Pasadena, CA, USA
Encrypting Digital Camera with Automatic Encryption Key Deletion
Oakley, Ernest C., Inventor; July 03, 2007; 10 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 23 Apr. 2003; US-Patent-7,240,208; US-Patent-Appl-SN-424287; NASA-Case-NPO-30703-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023432

A digital video camera includes an image sensor capable of producing a frame of video data representing an image viewed by the sensor, an image memory for storing video data such as previously recorded frame data in a video frame location of the image memory, a read circuit for fetching the previously recorded frame data, an encryption circuit having an encryption key input connected to receive the previously recorded frame data from the read circuit as an encryption key, an un-encrypted data input connected to receive the frame of video data from the image sensor and an encrypted data output port, and a write circuit for writing a frame of encrypted video data received from the encrypted data output port of the encryption circuit to the memory and overwriting the video frame location storing the previously recorded frame data.
Official Gazette of the U.S. Patent and Trademark Office
Cryptography; Digital Cameras; Video Data; Automatic Control



20070023496 NASA Langley Research Center, Hampton, VA, USA

Magnetic Field Response Measurement Acquisition System

Woodward, Stanley E., Inventor; Taylor, Bryant D., Inventor; January 09, 2007; 50 pp.; In English; Original contains black and white illustrations

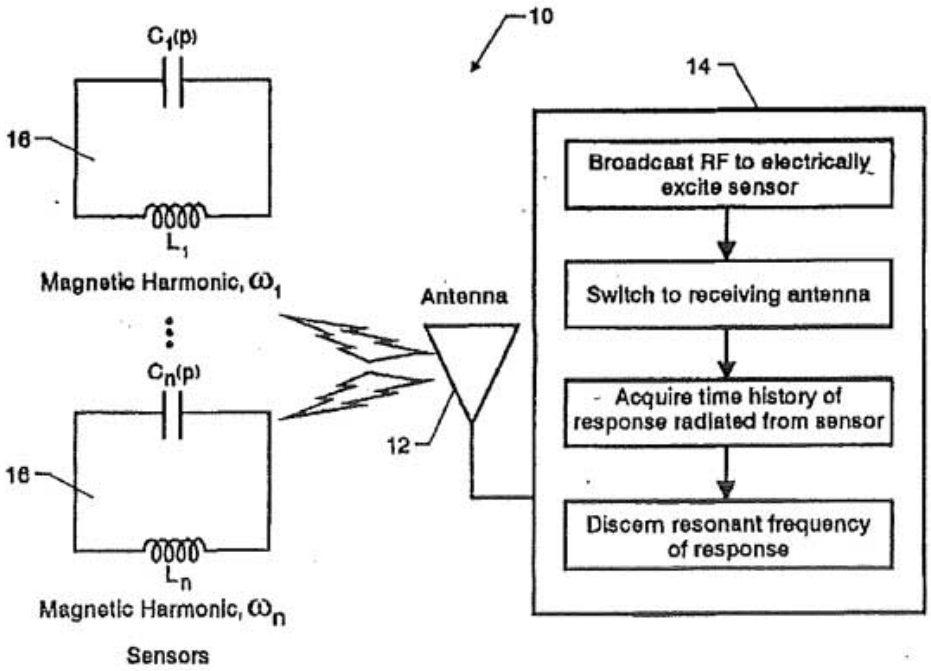
Patent Info.: Filed 15 Jun. 2006; US-Patent-7,159,774; US-Patent-Appl-SN-305854; US-Patent-Appl-SN-839445; US-Patent-Appl-SN-467844; US-Patent-Appl-SN-467840; US-Patent-Appl-SN-467841; US-Patent-Appl-SN-467113; NASA-Case-LAR-17280-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023496

Magnetic field response sensors designed as passive inductor- capacitor circuits produce magnetic field responses whose harmonic frequencies correspond to states of physical properties for which the sensors measure. Power to the sensing element is acquired using Faraday induction. A radio frequency antenna produces the time varying magnetic field used for powering the sensor, as well as receiving the magnetic field response of the sensor. An interrogation architecture for discerning changes in sensor's response frequency, resistance and amplitude is integral to the method thus enabling a variety of measurements. Multiple sensors can be interrogated using this method, thus eliminating the need to have a data acquisition channel dedicated to each sensor. The method does not require the sensors to be in proximity to any form of acquisition hardware. A vast array of sensors can be used as interchangeable parts in an overall sensing system.

Author

Circuits; Data Acquisition; Magnetic Fields; Resonance; Measuring Instruments



20070025066 Tope-McKay and Associates, Malibu, CA, USA

Cadmium-Zinc-Telluride Detectors

Harrison, Flona A., Inventor; Cook, Walter, Inventor; Chen, Chen, Chi Ming Hubert, Inventor; Kecman, Branislav, Inventor; Mao, Peter Hsih-Jer, Inventor; Schindler, Stephen M., Inventor; Bumham, Jill, Inventor; 4 Aug. 2005; 22 pp.; In English

Contract(s)/Grant(s): NAS7-1407

Patent Info.: Filed 20 Aug. 2004; US-Patent-Appl-10/923249; US 2005/0167606

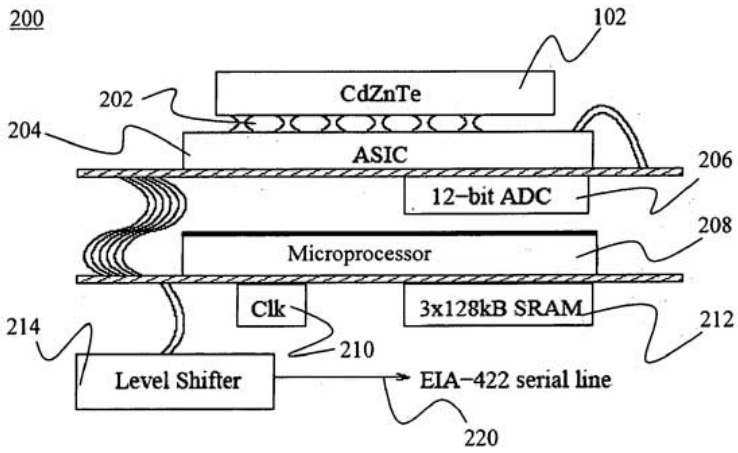
Report No.(s): PB2007-102939; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070025066

The present invention relates to cadmium-zinc-telluride (CdZnTe) detectors. More specifically, the present invention relates CdZnTe pixel detectors that are optimized for astrophysical applications.

Author

Cadmium Tellurides; Zinc Tellurides; Detectors; Sensors



36
LASERS AND MASERS

Includes lasing theory, laser pumping techniques, maser amplifiers, laser materials, and the assessment of laser and maser outputs. For cases where the application of the laser or maser is emphasized see also the specific category where the application is treated. For related information see also *76 Solid-State Physics*.

20070023678 NASA Marshall Space Flight Center, Huntsville, AL, USA

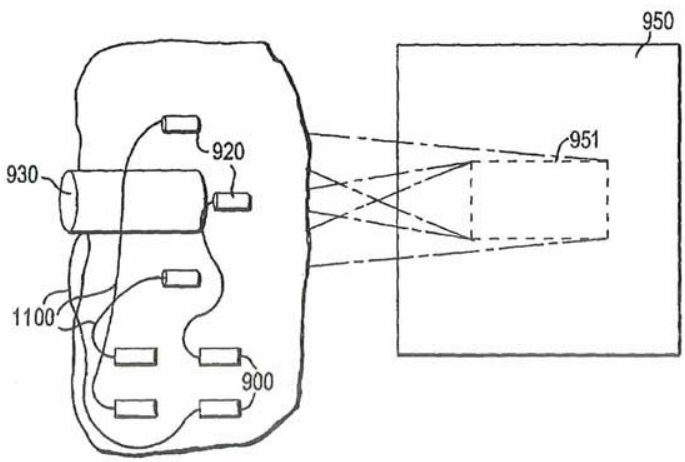
Fiber Coupled Laser Diodes with Even Illumination Pattern

Howard, Richard T., Inventor; 6 Feb. 2007; 11 pp.; In English; Original contains black and white illustrations; US-Patent-7,174,077; US-Patent-Appl-10/631220; NASA-Case-MFS-31843-1; No Copyright; Avail: CASI; A03, Hardcopy ONLINE: http://hdl.handle.net/2060/20070023678

An optical fiber for evenly illuminating a target. The optical fiber is coupled to a laser emitting diode and receives laser light. The laser light travels through the fiber optic and exits at an exit end. The exit end has a diffractive optical pattern formed thereon via etching, molding or cutting, to reduce the Gaussian profile present in conventional fiber optic cables The reduction of the Gaussian provides an even illumination from the fiber optic cable.

Author

Fiber Lasers; Fiber Optics; Laser Outputs; Semiconductor Lasers



Includes mechanical devices and equipment; machine elements and processes. For cases where the application of a device or the host vehicle is emphasized see also the specific category where the application or vehicle is treated. For robotics see *63 Cybernetics, Artificial Intelligence, and Robotics*; and *54 Man/System Technology and Life Support*.

20060048567 NASA Kennedy Space Center, Cocoa Beach, FL, USA

Self-Calibrating Pressure Transducer

Lueck, Dale E., Inventor; May 16, 2006; 11 pp.; In English; Original contains black and white illustrations

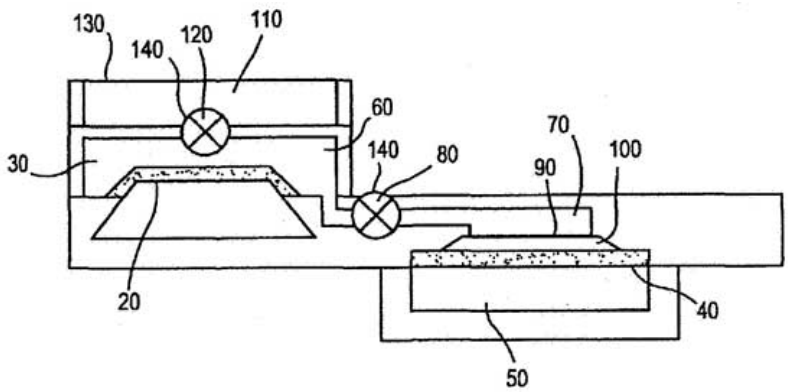
Patent Info.: Filed 17 Jun. 2004; US-Patent-7,043,960; US-Patent-Appl-SN-873997; NASA-Case-KSC-12350; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060048567

A self-calibrating pressure transducer is disclosed. The device uses an embedded zirconia membrane which pumps a determined quantity of oxygen into the device. The associated pressure can be determined, and thus, the transducer pressure readings can be calibrated. The zirconia membrane obtains oxygen .from the surrounding environment when possible. Otherwise, an oxygen reservoir or other source is utilized. In another embodiment, a reversible fuel cell assembly is used to pump oxygen and hydrogen into the system. Since a known amount of gas is pumped across the cell, the pressure produced can be determined, and thus, the device can be calibrated. An isolation valve system is used to allow the device to be calibrated in situ. Calibration is optionally automated so that calibration can be continuously monitored. The device is preferably a fully integrated MEMS device. Since the device can be calibrated without removing it from the process, reductions in costs and down time are realized.

Official Gazette of the U.S. Patent and Trademark Office

Calibrating; Pressure Sensors; Mechanical Devices; Mechanical Engineering



20060050048 NASA Marshall Space Flight Center, Huntsville, AL, USA

Motor Controller System For Large Dynamic Range of Motor Operation

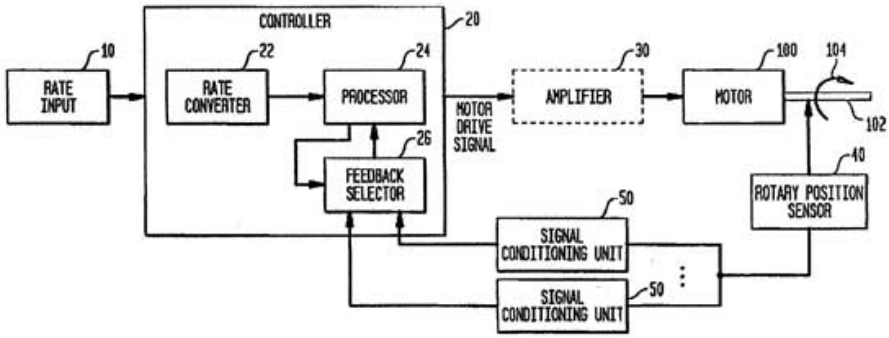
Howard, David E., Inventor; Alhorn, Dean C., Inventor; Smith, Dennis A., Inventor; Dutton, Kenneth R., Inventor; Paulson, Mitchell Scott, Inventor; July 25, 2006; 6 pp.; In English; Original contains black and white illustrations

Patent Info.: Filed 21 May 2004; US-Patent-7,081,730; US-Patent-Appl-SN-857375; NASA-Case-MFS-31529-1; No Copyright; Avail: CASI; A02, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060050048

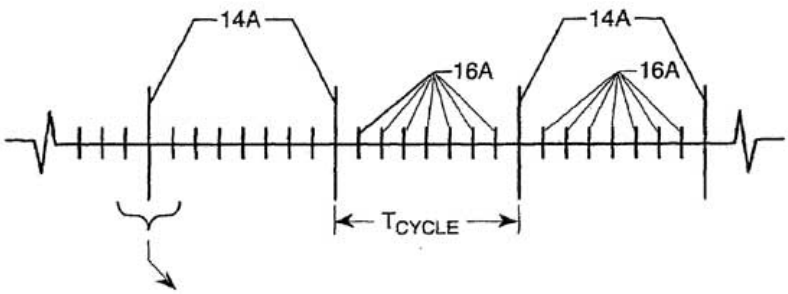
A motor controller system uses a rotary sensor with a plurality of signal conditioning units, coupled to the rotary sensor. Each of these units, which is associated with a particular range of motor output shaft rotation rates, generate a feedback signal indicative of the position of the motor s output shaft. A controller (i) converts a selected motor output shaft rotation rate to a corresponding incremental amount of rotational movement for a selected fixed time period, (ii) selects, at periodic completions of the selected fixed time period, the feedback signal from one of the signal conditioning units for which the particular range of motor output shaft rotation rates associated therewith encompasses the selected motor output shaft rotation

rate, and (iii) generates a motor drive signal based on a difference between the incremental amount of rotational movement and the feedback signal from the selected one of the signal conditioning Units.
Official Gazette of the U.S. Patent and Trademark Office
Shafts (Machine Elements); Controllers; Dynamic Range; Rotating Shafts; Signal Processing



20060050057 NASA Langley Research Center, Hampton, VA, USA
Interrupt-based Phase-locked Frequency Multiplier
Palumbo, Daniel L., Inventor; July 04, 2006; 7 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 17 Sep. 2004; US-Patent-7,071,741; US-Patent-Appl-SN-943825; NASA-Case-LAR-16134-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050057

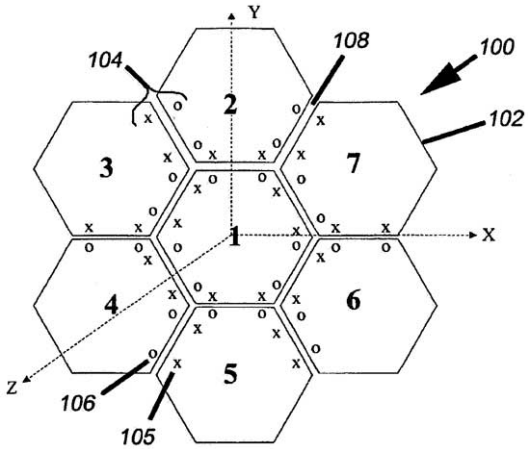
A method aud system utilize a processor's digital timer and two interrupts to form a frequency multiplier. The first internipt's processing time window is definable by a first uumber of counts C(sub 1), of the digital timer while the second interrupt's processing time window is definable by a second number of counts C(sub 2) of the digital timer. A count value CV utilized by the systedmethod is based on a desired frequency multiplier N(sub 1), the timer clock rate, and the tiole required for one cycle of an input signal. The first interrupt is triggered upon completion of one cycle ofthe input sigual at which point the processing time window associated therewith begins. The second interrupt is triggered each time the timer's overflow signal is generated at which point the processing time window associated with the second interrupt begins. During the occurrence of the second interrupt's processing. the count value CV is modified to maintain the first interrupt's processing time window approximately centered between two of the second internipt's processing time windows.
Official Gazette of the U.S. Patent and Trademark Office
Frequency Multipliers; Phase Locked Systems; Interruption; Pulse Communication



20060050060 NASA Marshall Space Flight Center, Huntsville, AL, USA
Global Radius of Curvature Estimation and Control System for Segmented Mirrors
Rakoczy, John M., Inventor; May 23, 2006; 23 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 6 Aug. 2003; US-Patent-7,050,161; US-Patent-Appl-SN-637085; NASA-Case-MFS-31807-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050060

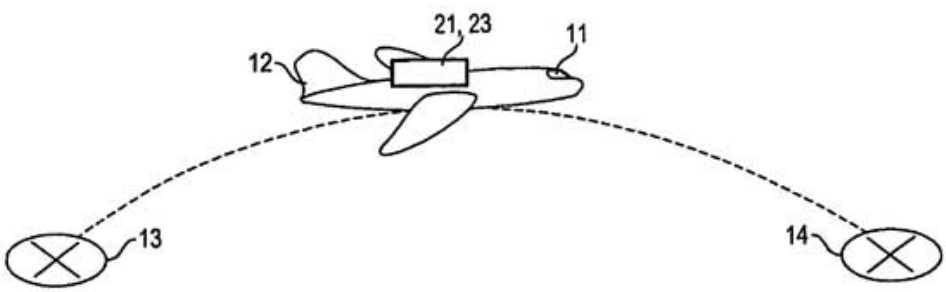
An apparatus controls positions of plural mirror segments in a segmented mirror with an edge sensor system and a

controller. Current mirror segment edge sensor measurements and edge sensor reference measurements are compared with calculated edge sensor bias measurements representing a global radius of curvature. Accumulated prior actuator commands output from an edge sensor control unit are combined with an estimator matrix to form the edge sensor bias measurements. An optimal control matrix unit then accumulates the plurality of edge sensor error signals calculated by the summation unit and outputs the corresponding plurality of actuator commands. The plural mirror actuators respond to the actuator commands by moving respective positions of the mixor segments. A predetermined number of boundary conditions, corresponding to a plurality of hexagonal mirror locations, are removed to afford mathematical matrix calculation.
Official Gazette of the U.S. Patent and Trademark Office
Segmented Mirrors; Control Equipment; Curvature; Radii; Estimating



20070003565 NASA Ames Research Center, Moffett Field, CA, USA
Intelligent Weather Agent
Spirkovska, Liljana, Inventor; October 31, 2006; 24 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 26 FEb. 2004; US-Patent-7,129,857; US-Patent-Appl-SN-789049; NASA-Case-ARC-12970-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070003565

Method and system for automatically displaying, visually and/or audibly and/or by an audible alarm signal, relevant weather data for an identified aircraft pilot, when each of a selected subset of measured or estimated aviation situation parameters, corresponding to a given aviation situation, has a value lying in a selected range. Each range for a particular pilot may be a default range, may be entered by the pilot and/or may be automatically determined from experience and may be subsequently edited by the pilot to change a range and to add or delete parameters describing a situation for which a display should be provided. The pilot can also verbally activate an audible display or visual display of selected information by verbal entry of a first command or a second command, respectively, that specifies the information required.
Official Gazette of the U.S. Patent and Trademark Office
Weather; Automatic Control; Systems Engineering; Display Devices



20070003581 NASA Ames Research Center, Moffett Field, CA, USA

Powder Handling Device for Analytical Instruments

Sarrazin, Philippe C., Inventor; Blake, David F., Inventor; September 26, 2006; 18 pp.; In English; Original contains black and white illustrations

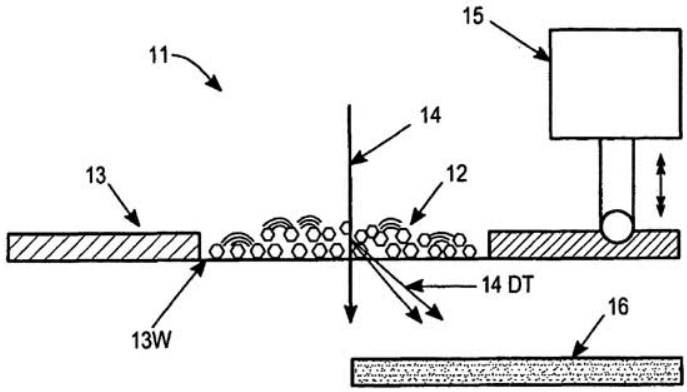
Patent Info.: Filed 17 Mar. 2004; US-Patent-7,113,265; US-Patent-Appl-SN-808704; NASA-Case-ARC-15101-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070003581

Method and system for causing a powder sample in a sample holder to undergo at least one of three motions (vibration, rotation and translation) at a selected motion frequency in order to present several views of an individual grain of the sample. One or more measurements of diffraction, fluorescence, spectroscopic interaction, transmission, absorption and/or reflection can be made on the sample, using light in a selected wavelength region.

Official Gazette of the U.S. Patent and Trademark Office

Powder (Particles); Holders; Mechanical Devices; Measuring Instruments



20070023433 Jet Propulsion Lab., California Inst. of Tech., Pasadena, CA, USA

Self Mountable and Extractable Ultrasonic/Sonic Anchor

Bar-Cohen, Yoseph, Inventor; Sherrit, Stewart, Inventor; January 02, 2007; 11 pp.; In English; Original contains black and white illustrations

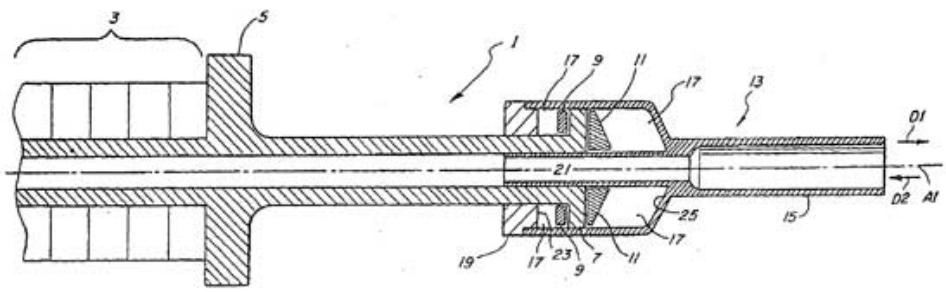
Patent Info.: Filed 1 Dec. 2004; US-Patent-7,156,189; US-Patent-Appl-SN-001465; NASA-Case-NPO-40827-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023433

Self drilling anchors and related methods and apparatus. In one embodiment an apparatus comprises a drill bit, a hammer mechanism for hammering the drill bit in a first direction and in a second direction, and a selection mechanism for controlling whether, at a given point in time, the drill bit is hammered in the first or second direction.

Official Gazette of the U.S. Patent and Trademark Office

Anchors (Fasteners); Drilling; Ultrasonics; Mounting



20070023681 NASA Marshall Space Flight Center, Huntsville, AL, USA

Systems, Methods and Apparatus for Determining Physical Properties of Fluids

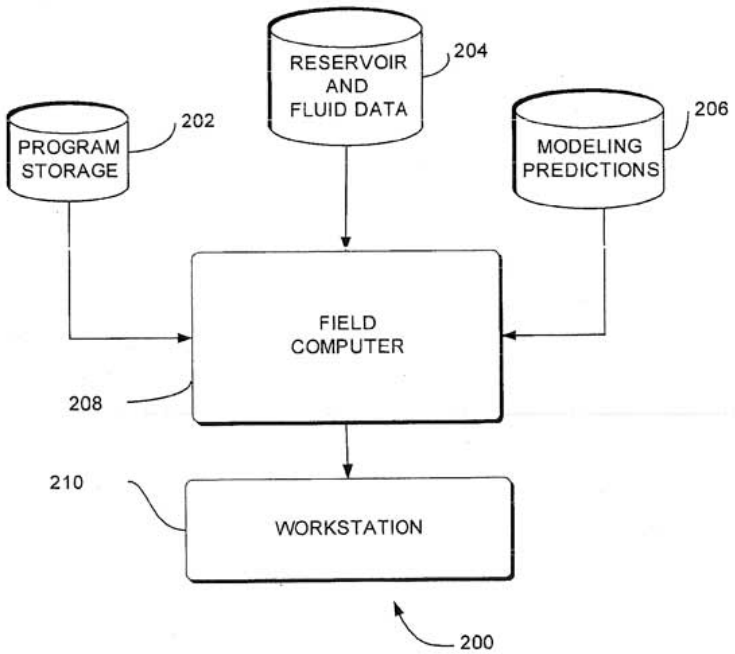
Butas, John P., Inventor; VanBuskirk, Paul D., Inventor; June 05, 2007; 26 pp.; In English; Original contains black and white illustrations; US-Patent-7,228,241; US-Patent-Appl-SN-152810; NASA-Case-MFS-32175-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023681

In some embodiments, systems and methods and apparatus are provided through which the equation of state is used to control a process through analyses of one or more properties of a fluid through an interactive modeler that models the equation of state for the fluid in the process based on measured signals and for selectively enabling the modeling of control changes to the process. In some embodiments, a device generates an indication of machine health based on variations on the equation of state for a fluid in a machine. In some embodiments, one or more properties for the fluid from at least one unmeasured machine parameter in the interactive modeler are determined for the machine at various operating states. In some embodiments, a difference between an expected one or more properties of the fluid beyond a set point indicates the health of the machine

Author

Equations of State; Thermodynamic Properties; Volume; Systems Health Monitoring; Fluids; Computer Systems Design



20070024450 MacMillan, Sobanski and Todd, LLC, Toledo, OH, USA

Magnetic Suspension and Drive System for Rotating Equipment

Jansen, Ralph H., Editor; Kascak, Peter E., Editor; Dever, Timothy P., Editor; 28 Sep. 2006; 12 pp.; In English

Contract(s)/Grant(s): NCC3-916; NCC3-924

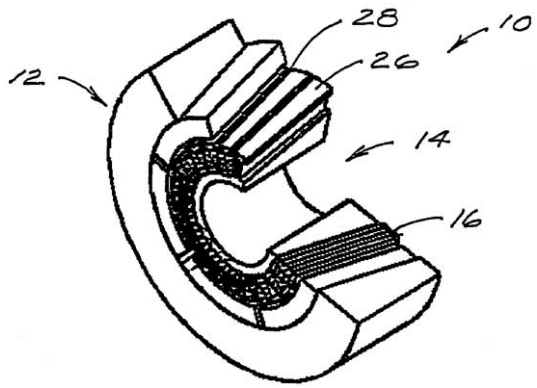
Patent Info.: Filed 28 Feb. 2005; US-Patent-Appl-60/068560; US 2006/0214525

Report No.(s): PB2007-101447; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070024450

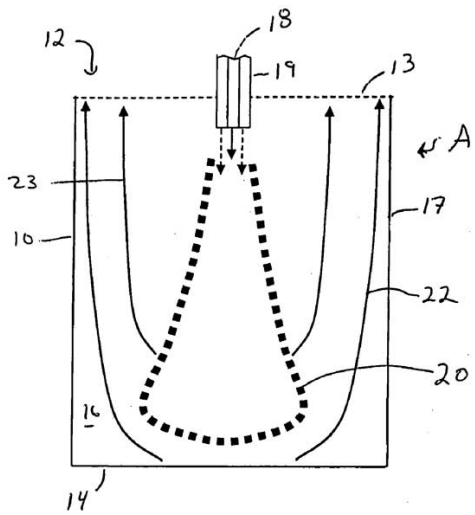
An electromagnetic suspension and rotary drive system comprises at least one conical bearingless motor/generator. Each conical bearingless motor/generator comprises a rotatable part and a stationary part. The rotatable part has an axis of rotation with respect to the stationary part. The stationary part has one or more windings for producing a drive field and a control field. The drive field is provided for exerting a torque on the rotatable part to transfer energy between the rotatable part and the stationary part. The control field is provided for exerting a force on the rotatable part to levitate the rotatable part. The force

exerted by the conical bearingless motor/generator is adapted to be directed at an angle greater than 0.degree. and less than 90.degree. relative to the axis of rotation of the rotatable part.
Author
Magnetic Suspension; Mechanical Drives; Magnetic Fields



20070025068 Troutman Sanders , LLP, Atlanta, GA, USA
Stagnation Point Reverse Flow Combustor for a Combustion System
Zinn, Ben T., Inventor; Neumeier, Yedidia, Inventor; Seitzman, Jerry M., Inventor; Jagoda, Jechiel, Inventor; Hashmomay, Ben-Amil, Inventor; 9 Feb. 2006; 29 pp.; In English; Original contains black and white illustrations
Contract(s)/Grant(s): NCC3-982
Patent Info.: Filed 11 May 2005; US-Patent-Appl-SN-127038; US 2006/0029894
Report No.(s): PB2007-103934; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070025068

A combustor assembly includes a combustor vessel having a wall, a proximate end defining an opening and a closed distal end opposite said proximate end. A manifold is carried by the proximate end. The manifold defines a combustion products exit. The combustion products exit being axially aligned with a portion of the closed distal end. A plurality of combustible reactant ports is carried by the manifold for directing combustible reactants into the combustion vessel from the region of the proximate end towards the closed distal end.
Author
Combustion; Combustion Chambers; Stagnation Point

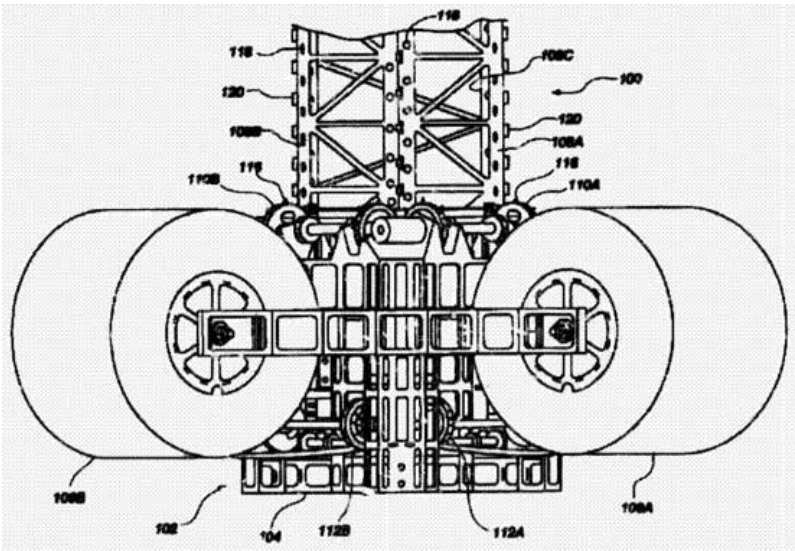


39
STRUCTURAL MECHANICS

Includes structural element design, analysis and testing; dynamic responses of structures; weight analysis; fatigue and other structural properties; and mechanical and thermal stresses in structures. For applications see *05 Aircraft Design, Testing and Performance*; and *18 Spacecraft Design, Testing and Performance*.

20070006501 Traskbritt, P.C., Salt Lake City, UT, USA
Depolyable Structural Assemblies, Systems for Deploying Such Structural Assemblies and Related Methods
Pryor, M. K.; Newlin, J. O.; 15 Mar 07; 37 pp.; In English
Contract(s)/Grant(s): NASI-02059
Patent Info.: Filed Filed 15 Mar 07; US-Patent-Appl-SN-11-080-357
Report No.(s): PB2007-101319; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070006501

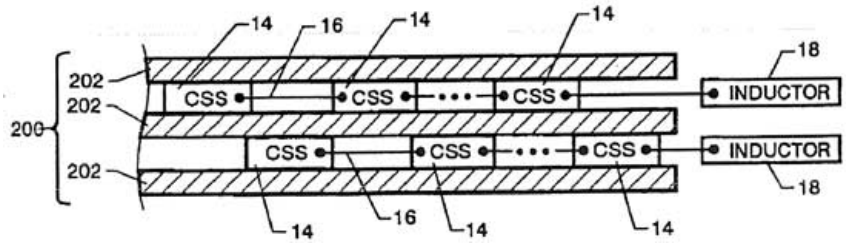
A deployable structural assembly is provided along with associated deployment mechanisms and associated methods of forming and deploying the structural assembly. In one exemplary embodiment, the structural assembly includes a plurality of structural side elements formed from furlable truss structures. The truss structures may include spaced apart longitudinal members, members extending substantially transversely between the longitudinal members, and diagonal members extending between the longitudinal members at an acute angle relative thereto. A plurality of interlocking elements are located along the edges of the longitudinal members and are configured to engage interlocking elements of an adjacent structural side element. In one embodiment the truss structures may be formed to include at least one material layer having the longitudinal members, the cross-members and the diagonals formed as an integral structure. In another exemplary embodiment one or more of the structural side elements may include electronic components integrated therewith.
NTIS
Deployment; Patent Applications; Structural Design; Folding Structures



20070023494 NASA Langley Research Center, Hampton, VA, USA
System and Method for Detecting Cracks and their Location
Woodward, Stanley E., Inventor; Shams, Qamar A., Inventor; June 19, 2007; 9 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 12 Sep. 2005; US-Patent-7,231,832; US-Patent-Appl-SN-229439; US-Patent-Appl-SN-611170; NASA-Case-LAR-16970-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023494

A system and method are provided for detecting cracks and their location in a structure. A circuit coupled to a structure has capacitive strain sensors coupled sequentially and in parallel to one another. When excited by a variable magnetic field, the circuit has a resonant frequency that is different for unstrained and strained states. In terms of strained states, the resonant frequency is indicative of a region of the circuit that is experiencing strain induced by strain in a region of the structure in

proximity to the region of the circuit. An inductor is electrically coupled to one end of each circuit. A magnetic field response recorder wirelessly transmits the variable magnetic field to the inductor and senses the resonant frequency of the circuit so-excited by the variable magnetic field.
Author
Cracks; Detection; Cracking (Fracturing); Structural Strain; Position; Position (Location); Identifying



44
ENERGY PRODUCTION AND CONVERSION

Includes specific energy conversion systems, e.g., fuel cells; and solar, geothermal, windpower, and waterwave conversion systems; energy storage; and traditional power generators. For technologies related to nuclear energy production see *73 Nuclear Physics*. For related information see also *07 Aircraft Propulsion and Power; 20 Spacecraft Propulsion and Power*; and *28 Propellants and Fuels*.

20070015919 White and Case, LLP, New York, NY, USA
Solar Cell Mechanical Interconnection Using Direct Wafer Bonding
Aiken, Daniel, Inventor; July 28, 2005; 6 pp.; In English
Contract(s)/Grant(s): NAS3-02201
Patent Info.: Filed 27 Jan. 2004; US-Patent-Appl-SN-10-765532
Report No.(s): PB2007-102836; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070015919

A multi-junction solar cell includes a plurality of monolithic cells joined together by direct wafer bonds. Each monolithic cell has at least one junction. The direct wafer bonds include no intervening material between joined monolithic cells. The direct wafer bonds are achieved by bonding forces between dipoles at the surfaces of adjoining monolithic cells.
Author
Bonding; Integrated Circuits; Microelectronics; Solar Cells; Wafers

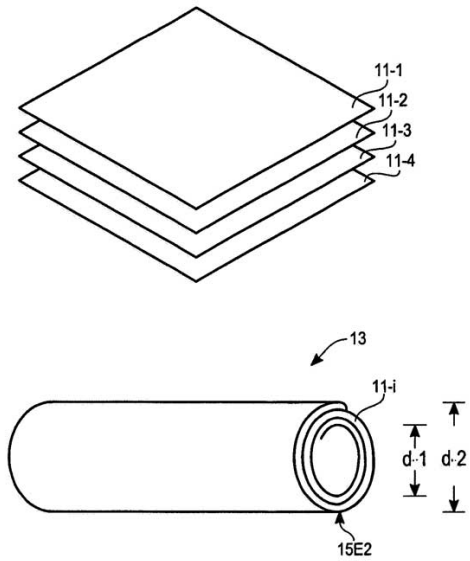
51
LIFE SCIENCES (GENERAL)

Includes general research topics related to plant and animal biology (non-human); ecology; microbiology; and also the origin, development, structure, and maintenance of animals and plants in space and related environmental conditions. For specific topics in life sciences see *categories 52 through 55*.

20060050046 NASA Ames Research Center, Moffett Field, CA, USA
Provision Of Carbon Nanotube Bucky Paper Cages For Immune Shielding Of Cells, Tissues, and Medical Devices
Loftus, David J., Inventor; July 04, 2006; 12 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 26 Jul. 2003; US-Patent-7,070,923; US-Patent-Appl-SN-608884; NASA-Case-ARC-15088-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050046

System and method for enclosing cells and/or tissue, for purposes of growth, cell differentiation, suppression of cell differentiation, biological processing and/or transplantation of cells and tissues (biological inserts), and for secretion, sensing and monitoring of selected chemical substances and activation of gene expression of biological inserts implanted into a human body. Selected cells and/or tissue are enveloped in a ‘cage’ that is primarily carbon nanotube Bucky paper, with a selected thickness and porosity. Optionally, selected functional groups, proteins and/or peptides are attached to the carbon nanotube cage, or included within the cage, to enhance the growth and/or differentiation of the cells and/or tissue, to select for certain

cellular sub-populations, to optimize certain functions of the cells and/or tissue and/or to optimize the passage of chemicals across the cage surface(s). A cage system is also used as an immuns shield and to control operation of a nano-device or macroscopic device, located within the cage, to provide or transform a selected chemical and/or a selected signal.
Official Gazette of the U.S. Patent and Trademark Office
Carbon Nanotubes; Medical Equipment; Proteins; Gene Expression; Cells (Biology); Bioprocessing; Control Equipment; Detection



20070003563 NASA Ames Research Center, Moffett Field, CA, USA
Bucky Paper as a Support Membrane in Retinal Cell Transplantation
Loftus, David J., Inventor; Leng, Theodore, Inventor; Huie, Philip, Inventor; Fishman, Harvey, Inventor; November 14, 2006; 7 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 4 Sep. 2002; US-Patent-7,135,172; US-Patent-Appl-SN-238515; NASA-Case-ARC-14940-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070003563

A method for repairing a retinal system of an eye, using bucky paper on which a plurality of retina pigment epithelial cells and/or iris pigment epithelial cells and/or stem cells is deposited, either randomly or in a selected cell pattern. The cell-covered bucky paper is positioned in a sub-retinal space to transfer cells to this space and thereby restore the retina to its normal functioning, where retinal damage or degeneration, such as macular degeneration, has occurred.
Official Gazette of the U.S. Patent and Trademark Office
Membranes; Retina; Stem Cells; Transplantation; Cell Membranes (Biology)

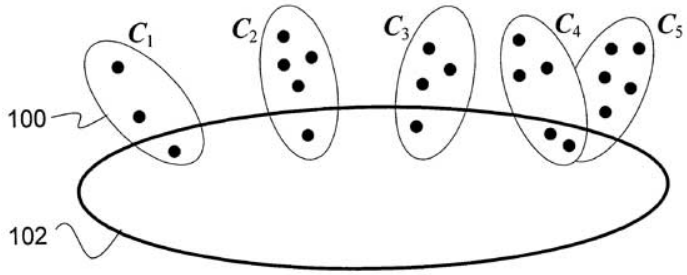
59
MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

Includes general topics and overviews related to mathematics and computer science. For specific topics in these areas see *categories 60 through 67*.

20070014850 Tope-McKay and Associates, Malibu, CA, USA
System for Solving Diagnosis and Hitting Set Problems
Fijany, A., Inventor; Vatan, F., Inventor; August 31, 2006; 27 pp.; In English
Patent Info.: Filed Filed 13 Feb 06; US-Patent-Appl-SN-11-353-673
Report No.(s): PB2007-101668; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070014850

The diagnosis problem arises when a system's actual behavior contradicts the expected behavior, thereby exhibiting symptoms (a collection of conflict sets). System diagnosis is then the task of identifying faulty components that are responsible

for anomalous behavior. To solve the diagnosis problem, the present invention describes a method for finding the minimal set of faulty components (minimal diagnosis set) that explain the conflict sets. The method includes acts of creating a matrix of the collection of conflict sets, and then creating nodes from the matrix such that each node is a node in a search tree. A determination is made as to whether each node is a leaf node or has any children nodes. If any given node has children nodes, then the node is split until all nodes are leaf nodes. Information gathered from the leaf nodes is used to determine the minimal diagnosis set.
Author
Diagnosis; Problem Solving; Algorithms



20070025065 Coburn (Thompson) LLP, Saint Louis, MO, USA
Investigation of Destroyed Assemblies and Identification of Components Thereof Using Texture Mapping
DiSanto, Brenda I., Editor; Hummeniuk, Bob P., Editor; Bard, Richard D., Jr., Editor; Edwards, Robert, Editor; Pitard, A. G., Editor; Hollifield, Kenneth D., Editor; Clark, Danny L., Editor; Little, Mia P., Editor; Boykin, Jeffery V., Editor; Edwards, Ken L., Editor; Zeiters, David M., Editor; 21 Jul. 2005; 7 pp.; In English
Contract(s)/Grant(s): NASA-GS-23F-0183K; NASA-1970448303
Patent Info.: Filed 23 Jul. 2004; US-Patent-Appl-10/898514; US 1005/0157919
Report No.(s): PB2007-102770; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070025065

Methods are disclosed for providing a means for identifying recovered component parts of a destroyed assembly quickly and relatively easily using digital or electronic scanning techniques and comparison to virtual components that are presumed to have constituted the original assembly. The method also provides a means for digitally rigging the component parts in three-dimensional virtual space, thereby minimizing and, in some situations, possibly eliminating any need to physical rig the component parts. The methods include texture mapping a photographic image of a component part onto a representation of the component.
Author
Assemblies; Components; Digital Techniques

62
COMPUTER SYSTEMS

Includes computer networks and distributed processing systems. For information systems see *82 Documentation and Information Science*. For computer systems applied to specific applications, see the associated category.

20070023420 NASA Dryden Flight Research Center, Edwards, CA, USA
Compression of a Data Stream by Selection among a Set of Compression Tools
Arlid, Bertelrud, Inventor; Russell, Franz, Inventor; February 20, 2007; 12 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 26 Mar. 2002; US-Patent-7,180,943; US-Patent-Appl-SN-113637; NASA-Case-DRC-001-049; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023420

A stream of raw data is compressed prior to transmissio in a communication channel by a system which includes modules for choosing a current segment of the raw data stream for processing and defining a set of operators for representing data segments by a mathematical operation and parameters thereof. The system performs a competitive evaluation of different tools

comprising different combinations of one or more of the operators and the parameters threrof with respect to the current data segment in order to determine relative abilities among the different tools to reduce the number of bits required to represent the current data segment. The system then selects a tool and a set of parameters thereof found in the competitive evaluation to have a superior ability relative to others of the different tools to reduce a number of bits required to represent the current data segment.

Official Gazette of the U.S. Patent and Trademark Office

Data Flow Analysis; Data Compression; Channels (Data Transmission); Systems Analysis

63
CYBERNETICS, ARTIFICIAL INTELLIGENCE AND ROBOTICS

Includes feedback and control theory, information theory, machine learning, and expert systems. For related information see also *54 Man/System Technology and Life Support*.

20060050053 NASA Glenn Research Center, Cleveland, OH, USA

Operation of a Cartesian Robotic System in a Compact Microscope with Intelligent Controls

McDowell, Mark, Inventor; September 12, 2006; 36 pp.; In English; Original contains black and white illustrations

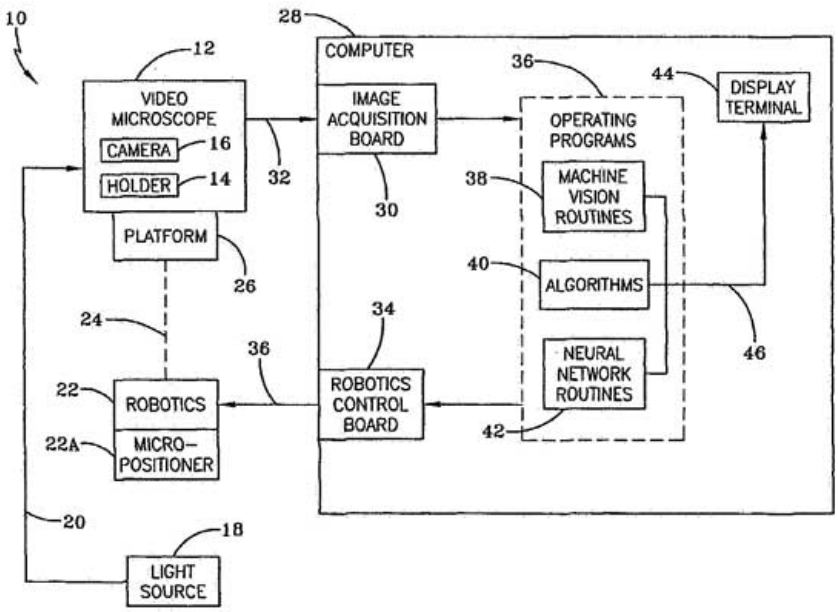
Patent Info.: Filed 4 Feb. 2005; US-Patent- 7,106,502; US-Patent-Appl-SN-053758; NASA-Case-LEW-17484-2; US-Patent-Appl-SN-645999; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060050053

A Microscope Imaging System (CMIS) with intelligent controls is disclosed that provides techniques for scanning, identifying, detecting and tracking microscopic changes in selected characteristics or features of various surfaces including, but not limited to, cells, spheres, and manufactured products subject to difficult-to-see imperfections. The practice of the present invention provides applications that include colloidal hard spheres experiments, biological cell detection for patch clamping, cell movement and tracking, as well as defect identification in products, such as semiconductor devices, where surface damage can be significant, but difficult to detect. The CMIS system is a machine vision system, which combines intelligent image processing with remote control capabilities and provides the ability to autofocus on a microscope sample, automatically scan an image, and perform machine vision analysis on multiple samples simultaneously.

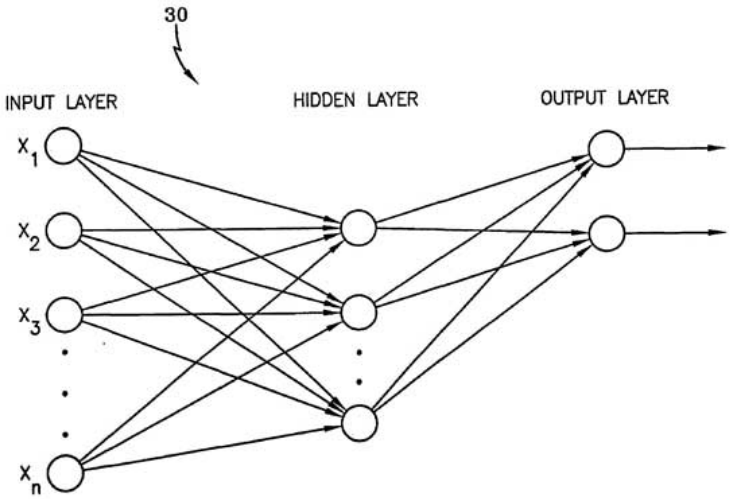
Official Gazette of the U.S. Patent and Trademark Office

Image Processing; Microscopy; Colloids; Spheres; Identifying; Detection; Cells (Biology); Robotics; Remote Control



20060050064 NASA Glenn Research Center, Cleveland, OH, USA
Optimization of Training Sets For Neural-Net Processing of Characteristic Patterns From Vibrating Solids
Decker, Arthur J., Inventor; July 04, 2006; 25 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 1 Apr. 2003; US-Patent-7,072,874; US-Patent-Appl-SN-404725; NASA-CASE-LEW-17,238-1; US-Patent-Appl-SN-404222; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050064

An artificial neural network is disclosed that processes holography generated characteristic pattern of vibrating structures along with finite-element models. The present invention provides for a folding operation for conditioning training sets for optimally training forward-neural networks to process characteristic fringe pattern. The folding pattern increases the sensitivity of the feed-forward network for detecting changes in the characteristic pattern The folding routine manipulates input pixels so as to be scaled according to the location in an intensity range rather than the position in the characteristic pattern.
Official Gazette of the U.S. Patent and Trademark Office
Neural Nets; Solids; Vibration; Optimization



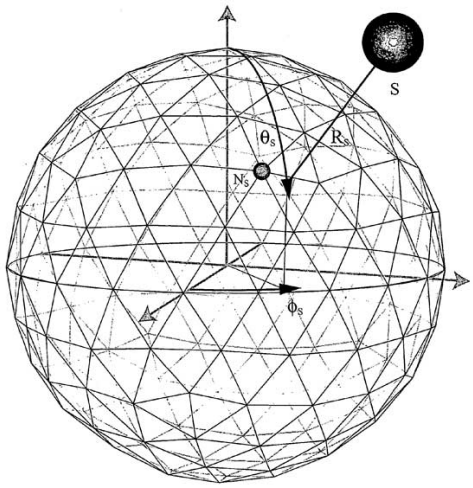
20070011603 Morgan Lewis and Bockius, LLP, Washington, DC, USA
Architecture for Robot Intelligence
Peters, R. A.; 31 Dec 03; 13 pp.; In English
Contract(s)/Grant(s): DASG600110001; DASG609910005
Patent Info.: Filed Filed 31 Dec 03; US-Patent-Appl-SN-10-749 326
Report No.(s): PB2007-103269; No Copyright; Avail: CASI; A03, Hardcopy

An architecture for robot intelligence enables a robot to learn new behaviors and create new behavior sequences autonomously and interact with a dynamically changing environment. Sensory information is mapped onto a Sensory Ego-Sphere (SES) that rapidly identifies important changes in the environment and functions much like short term memory. Behaviors are stored in a DBAM that creates an active map from the robot's current state to a goal state and functions much like long term memory. A dream state converts recent activities stored in the SES and creates or modifies behaviors in the DBAM.
NTIS
Artificial Intelligence; Robots; Robot Control; Robotics

20070025470 Morgan, Lewis, and Bockius, Washington, DC, USA
Sensory Ego-Sphere: A Mediating Interface between Sensors and Cognition
Peters, Richard Alan, II, Inventor; 6 Oct. 2005; 25 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 30 Dec. 2004; US-Patent-Appl-11/025768; US 2005/0223176
Report No.(s): PB2007-105856; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070025470

A Sensory Ego-Sphere (SES) is an interface for a robot that serves to mediate information between sensors and cognition. The SES can be visualized as a sphere centered on the coordinate frame of the robot, spatially indexed by polar and azimuthal

angles. Internally, the SES is a graph with a fixed number of edges that partitions surrounding space and contains localized sensor information from the robot.
Official Gazette of the U.S. Patent and Trademark Office
Cognition; Mediation; Patent Applications; Robots; Spheres

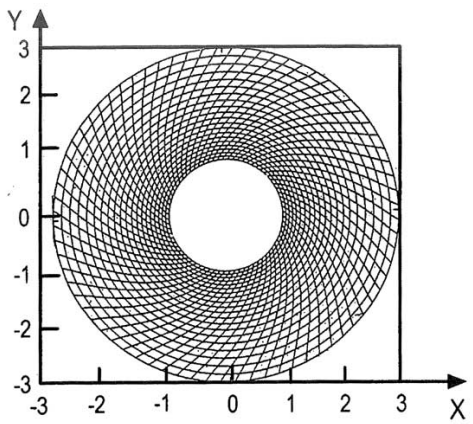


64
NUMERICAL ANALYSIS

Includes iteration, differential and difference equations, and numerical approximation.

20070023497 NASA Ames Research Center, Moffett Field, CA, USA
Enhanced Elliptic Grid Generation
Kaul, Upender K., Editor; 12 Jun. 2007; 8 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 7 Nov. 2003; US-Patent-7,231,329; US-Patent-Appl-SN-706478; US-Patent-Appl-SN-425750; NASA-Case-ARC-14710-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023497

Method and system for generating an elliptic grid in generalized coordinates in two or three dimensions, where one or more decay parameters near a boundary segment of a grid are determined as part of the grid solution, rather than being prescribed initially by a user. The decay parameters may vary with one or more generalized coordinates and determine the rate(s) at which separation distances between adjacent grid lines change as one moves toward or away from a grid boundary segment.
Official Gazette of the U.S. Patent and Trademark Office
Grid Generation (Mathematics); Ellipticity; Mathematical Models; Elliptic Differential Equations



70
PHYSICS (GENERAL)

Includes general research topics related to mechanics, kinetics, magnetism, and electrodynamics. For specific areas of physics see *categories 71 through 77*. For related instrumentation see *35 Instrumentation and Photography*; for geophysics, astrophysics, or solar physics see *46 Geophysics, 90 Astrophysics*, or *92 Solar Physics*.

20070011519 Law Offices of John Givson Semmes, Potomas, MD, USA
Production of Stable Aqueous Dispersions of Carbon Nanotubes Government Interests
Clarke, M. S.; Feedback, D. L.; 2 Nov 04; 13 pp.; In English
Contract(s)/Grant(s): NCC.SUB.9-41
Patent Info.: Filed Filed 2 Nov 04; US-Patent-Appl-SN-10-978 333
Report No.(s): PB2007-101625; No Copyright; Avail: CASI; A03, Hardcopy

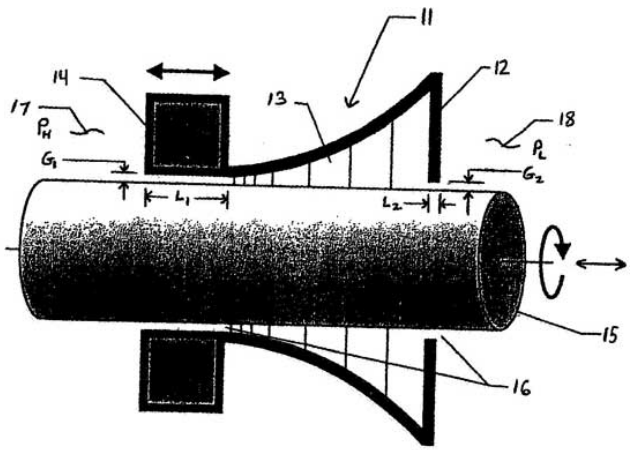
Methods of producing stable dispersions of single-walled carbon nanotube structures in solutions are achieved utilizing dispersal agents. The dispersal agents are effective in substantially solubilizing and dispersing single-walled carbon nanotube structures in aqueous solutions by coating the structures and increasing the surface interaction between the structures and water. Exemplary agents suitable for dispersing nanotube structures in aqueous solutions include synthetic and natural detergents having high surfactant properties, deoxycholates, cyclodextrins, chaotropic salts and ion pairing agents. The dispersed nanotube structures may further be deposited on a suitable surface in isolated and individualized form to facilitate easy characterization and further processing of the structures.
NTIS
Carbon Nanotubes; Nanostructure Growth; Dispersing; Aqueous Solutions

71
ACOUSTICS

Includes sound generation, transmission, and attenuation. For noise pollution see *45 Environment Pollution*. For aircraft noise see also *02 Aerodynamics* and *07 Aircraft Propulsion and Power*.

20060050051 NASA Glenn Research Center, Cleveland, OH, USA
Acoustic Seal
Steinetz, Bruce M., Inventor; August 08, 2006; 17 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 22 Aug. 2003; US-Patent-6,086,648; US-Patent-Appl-SN-10/652088; NASA-Case-LEW-17,182-1; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20060050051

The invention relates to a sealing device having an acoustic resonator. The acoustic resonator is adapted to create acoustic waveforms to generate a sealing pressure barrier blocking fluid flow from a high pressure area to a lower pressure area. The sealing device permits noncontacting sealing operation. The sealing device may include a resonant-macrosonic-synthesis (RMS) resonator.
Official Gazette of the U.S. Patent and Trademark Office
Sound Generators; Resonators; Sealing; Sound Waves; Fluid Flow



20070003584 NASA Langley Research Center, Hampton, VA, USA

MEMS Based Acoustic Array

Sheplak, Mark, Inventor; Nishida, Toshikaza, Inventor; Humphreys, William M., Inventor; Arnold, David P., Inventor; August 15, 2006; 26 pp.; In English; Original contains black and white illustrations

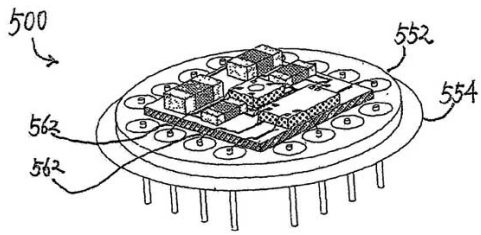
Patent Info.: Filed 28 Nov. 2001; US-Patent-7,092,539; US-Patent-Appl-SN-997113; NASA-Case-LAR-16231-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070003584

Embodiments of the present invention described and shown in the specification aid drawings include a combination responsive to an acoustic wave that can be utilized as a dynamic pressure sensor. In one embodiment of the present invention, the combination has a substrate having a first surface and an opposite second surface, a microphone positioned on the first surface of the substrate and having an input and a first output and a second output, wherein the input receives a biased voltage, and the microphone generates an output signal responsive to the acoustic wave between the first output and the second output. The combination further has an amplifier positioned on the first surface of the substrate and having a first input and a second input and an output, wherein the first input of the amplifier is electrically coupled to the first output of the microphone and the second input of the amplifier is electrically coupled to the second output of the microphone for receiving the output sinual from the microphone. The amplifier is spaced from the microphone with a separation smaller than 0.5 mm.

Official Gazette of the U.S. Patent and Trademark Office

Microelectromechanical Systems; Acoustics; Microphones; Arrays



73
NUCLEAR PHYSICS

Includes nuclear particles; and reactor theory. For space radiation see *93 Space Radiation*. For atomic and molecular physics see *72 Atomic and Molecular Physics*. For elementary particle physics see *77 Physics of Elementary Particles and Fields*. For nuclear astrophysics see *90 Astrophysics*.

20070003582 NASA Marshall Space Flight Center, Huntsville, AL, USA

Radio-Frequency Driven Dielectric Heaters for Non-Nuclear Testing in Nuclear Core Development

Sims, William Herbert, III, Inventor; Godfroy, Thomas J., Inventor; Bitteker, Leo, Inventor; August 22, 2006; 14 pp.; In English; Original contains black and white illustrations

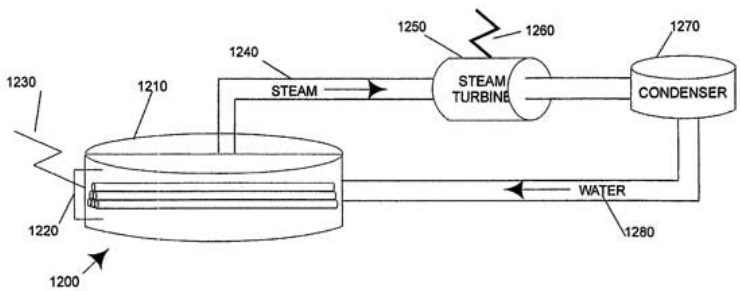
Patent Info.: Filed 13 Sep. 2004; US-Patent-7,095,000; US-Patent-Appl-SN-943827; NASA-Case-MSF-31823-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070003582

Apparatus and methods are provided through which a radiofrequency dielectric heater has a cylindrical form factor, a variable thermal energy deposition through variations in geometry and composition of a dielectric, and/or has a thermally isolated power input.

Official Gazette of the U.S. Patent and Trademark Office

Dielectrics; Heaters; Radio Frequencies; Nuclear Energy

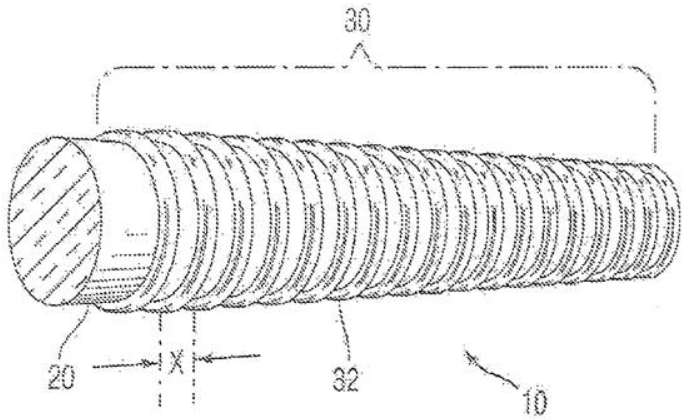


74
OPTICS

Includes light phenomena and the theory of optical devices; for specific optical devices see also *35 Instrumentation and Photography*. For lasers see *36 Lasers and Masers*.

20070023426 Jet Propulsion Lab., California Inst. of Tech., Pasadena, CA, USA
Vertically-coupled Whispering Gallery Mode Resonator Optical Waveguide, and Methods
Matsko, Andrey B., Inventor; Savchenkov, Anatolly A., Inventor; Matleki, Lute, Inventor; February 27, 2007; 7 pp.; In English; Original contains black and white illustrations
Patent Info.: Filed 5 Jun. 2006; US-Patent-7,184,624; US-Patent-Appl-SN-422147; NASA-Case-NPO-42312-1; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070023426

A vertically-coupled whispering gallery mode (WGM) resonator optical waveguide, a method of reducing a group velocity of light, and a method of making a waveguide are provided. The vertically-coupled WGM waveguide comprises a cylindrical rod portion having a round cross-section and an outer surface. First and second ring-shaped resonators are formed on the outer surface of the cylindrical rod portion and are spaced from each other along a longitudinal direction of the cylindrical rod. The first and second ringshaped resonators are capable of being coupled to each other by way an evanescent field formed in an interior of the cylindrical rod portion.
Official Gazette of the U.S. Patent and Trademark Office
Coupled Modes; Optical Waveguides; Resonators; Whispering Gallery Modes

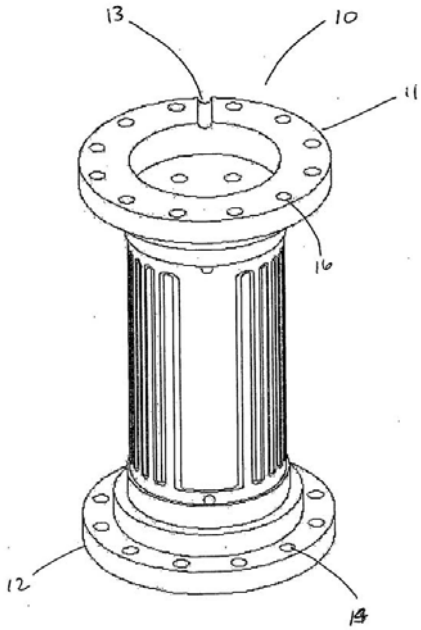


76
SOLID-STATE PHYSICS

Includes condensed matter physics, crystallography, and superconductivity. For related information see also *33 Electronics and Electrical Engineering*; and *36 Lasers and Masers*.

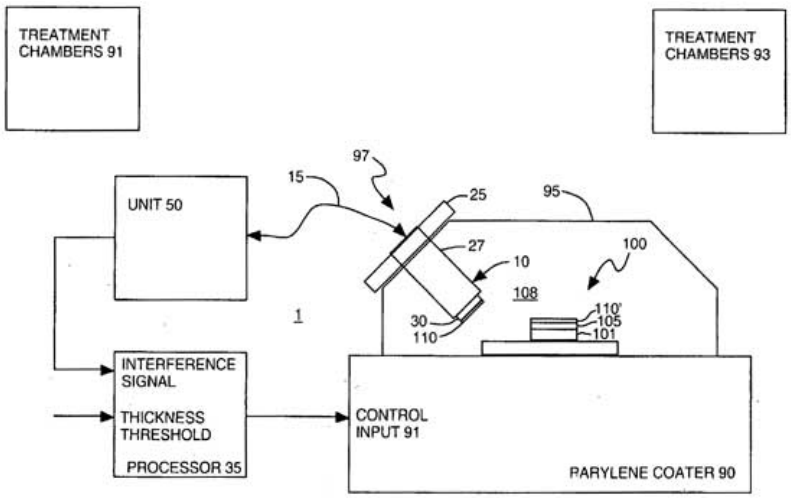
20070014854 NASA Goddard Space Flight Center, Greenbelt, MD, USA
Passive Gas-Gap Heat Switch for Adiabatic Demagnitization Refrigerator
Shirron, P. J., Inventor; Di Pirro, M. J., Inventor; October 20, 2005; 9 pp.; In English
Patent Info.: Filed Filed 10 May 05; US-Patent-Appl-SN-11-126-516
Report No.(s): PB2007-105949; No Copyright; Avail: CASI; A02, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070014854

A passive gas-gap heat switch for use with a multi-stage continuous adiabatic demagnetization refrigerator (ADR). The passive gas-gap heat switch turns on automatically when the temperature of either side of the switch rises above a threshold value and turns off when the temperature on either side of the switch falls below this threshold value. One of the heat switches in this multistage process must be conductive in the 0.25.degree. K to 0.3.degree. K range. All of the heat switches must be capable of switching off in a short period of time (1-2 minutes), and when off to have a very low thermal conductance. This arrangement allows cyclic cooling cycles to be used without the need for separate heat switch controls.
Author
Adiabatic Conditions; Demagnetization; Magnetic Cooling; Magnetic Fields; Refrigerators; Switches



20070017887 NASA Langley Research Center, Hampton, VA USA
Systems and Methods for Fabricating Thin Films
Beamesdefer, Michael A., Inventor; October 20, 2005; 12 pp.; In English
Patent Info.: Filed 18 Feb. 2005; US-Patent-Appl-SN-066654; US-Patent-Appl-SN-546311
Report No.(s): PB2007-105989; No Copyright; Avail: CASI; A03, Hardcopy
ONLINE: http://hdl.handle.net/2060/20070017887

Disclosed are systems and methods for depositing thin films of uniform thickness. In an exemplary system, there is a coating chamber, an optical fiber in the coating chamber, and a plate oriented to receive light from the optical fiber. The exemplary system also includes a processor configured to process a light signal reflected from a thin film layer on a substrate. The coating process is responsive to the reflected light signal received from the thin film layer.
Author
Thin Films; Fabrication



20070021729 Evan Law Group, LLC, Chicago, IL, USA

Multi-Functional Plasmon-Resonant Contrast Agents for Optical Coherence Tomography

Boppart, S. A., Inventor; Wei, A., Inventor; 4 Aug. 2005; 19 pp.; In English

Contract(s)/Grant(s): NAS2-02057

Patent Info.: Filed Filed 8 Jan 04; US-Patent-Appl-SN-10-753 972

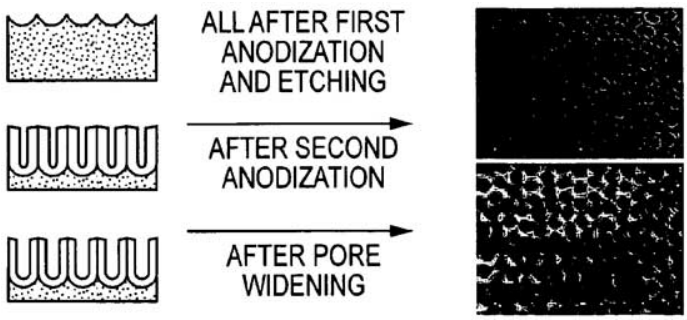
Report No.(s): PB2007-104244; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070021729

A method of forming an image of a sample, comprising: forming an image of a mixture, by exposing the mixture to electromagnetic radiation; wherein the mixture comprises the sample and plasmon-resonant nanoparticles, and wherein the electromagnetic radiation is in the frequency range of infra-red to ultraviolet light.

Official Gazette of the U.S. Patent and Trademark Office

Plasmons; Tomography; Coherence



20070023431 NASA Glenn Research Center, Cleveland, OH, USA

Gap/silicon Tandem Solar Cell with Extended Temperature Range

Landis, Geoffrey A., Inventor; December 12, 2006; 12 pp.; In English; Original contains black and white illustrations

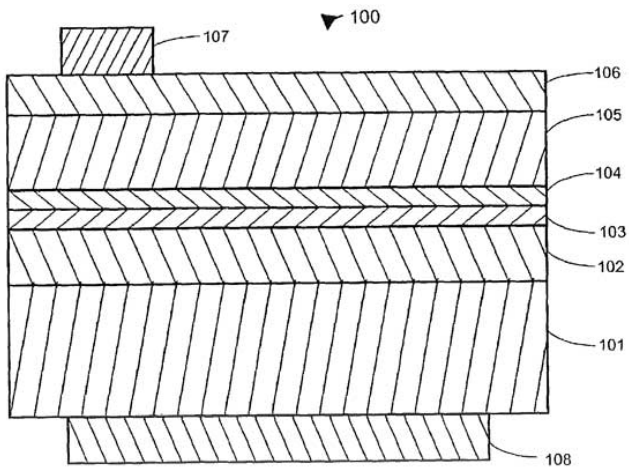
Patent Info.: Filed 31 Mar. 2003; US-Patent-7,148,417; US-Patent-Appl-SN-403714; NASA-Case-LEW-17,396-1; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20070023431

A two-junction solar cell has a bottom solar cell junction of crystalline silicon, and a top solar cell junction of gallium phosphide. A three (or more) junction solar cell has bottom solar cell junctions of silicon, and a top solar cell junction of gallium phosphide. The resulting solar cells exhibit improved extended temperature operation.

Official Gazette of the U.S. Patent and Trademark Office

Temperature Distribution; Energy Gaps (Solid State); Semiconductor Junctions; Solar Cells



82
DOCUMENTATION AND INFORMATION SCIENCE

Includes information management; information storage and retrieval technology; technical writing; graphic arts; and micrography. For computer program documentation see *61 Computer Programming and Software*.

20060049148 Jet Propulsion Lab., California Inst. of Tech., Pasadena, CA, USA

Fast Erase Method and Apparatus For Digital Media

Oakely, Ernest C., Inventor; May 23, 2006; 16 pp.; In English; Original contains black and white illustrations

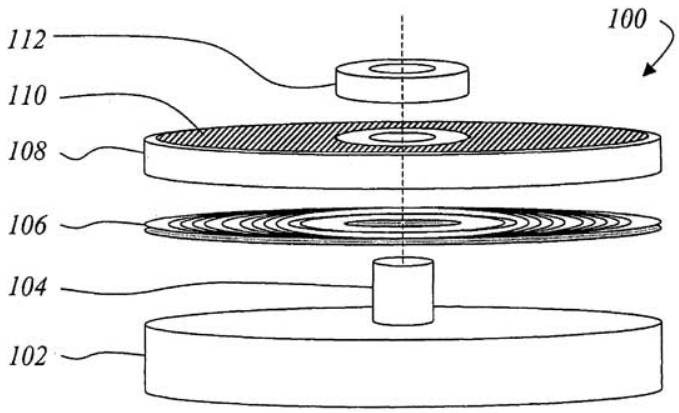
Patent Info.: Filed 29 Jun. 2004; US-Patent-7,050,256; US-Patent-Appl-SN-885529; NASA-Case-NPO-40755; No Copyright; Avail: CASI; A03, Hardcopy

ONLINE: http://hdl.handle.net/2060/20060049148

A non-contact fast erase method for erasing information stored on a magnetic or optical media. The magnetic media element includes a magnetic surface affixed to a toroidal conductor and stores information in a magnetic polarization pattern. The fast erase method includes applying an alternating current to a planar inductive element positioned near the toroidal conductor, inducing an alternating current in the toroidal conductor, and heating the magnetic surface to a temperature that exceeds the Curie-point so that information stored on the magnetic media element is permanently erased. The optical disc element stores information in a plurality of locations being defined by pits and lands in a toroidal conductive layer. The fast erase method includes similarly inducing a plurality of currents in the optical media element conductive layer and melting a predetermined portion of the conductive layer so that the information stored on the optical medium is destroyed.

Official Gazette of the U.S. Patent and Trademark Office

Conductors; Alternating Current; Optical Disks; Optical Data Storage Materials



Subject Term Index

Personal Author Index

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The NASA Patent Counsel having cognizance of the invention is determined by the first three letters or prefix of the NASA Case Number assigned to the invention. The addresses and contact numbers for NASA Patent Counsels are listed alongside the NASA Case Number prefix letters as follows:

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