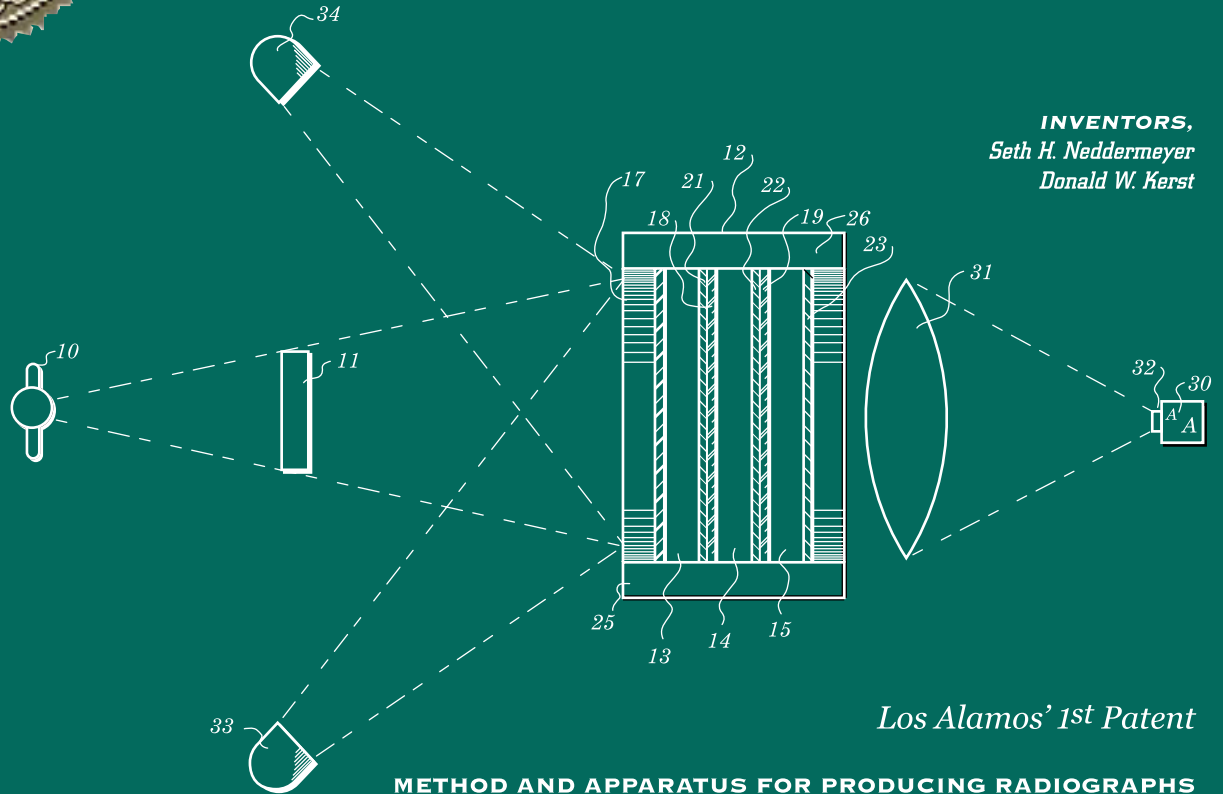




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Applauding our innovators



INVENTORS,
Seth H. Neddermeyer
Donald W. Kerst

Los Alamos' 1st Patent

METHOD AND APPARATUS FOR PRODUCING RADIOGRAPHS

Issued April 1947

THE 2001 PATENT & LICENSING AWARDS
Carrying on the tradition of world-changing innovation

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Applauding our innovators

The 2001 Patent & Licensing Awards

Carrying on the tradition of world-changing innovation

Thursday, February 21, 2002
Los Alamos National Laboratory
Los Alamos, New Mexico



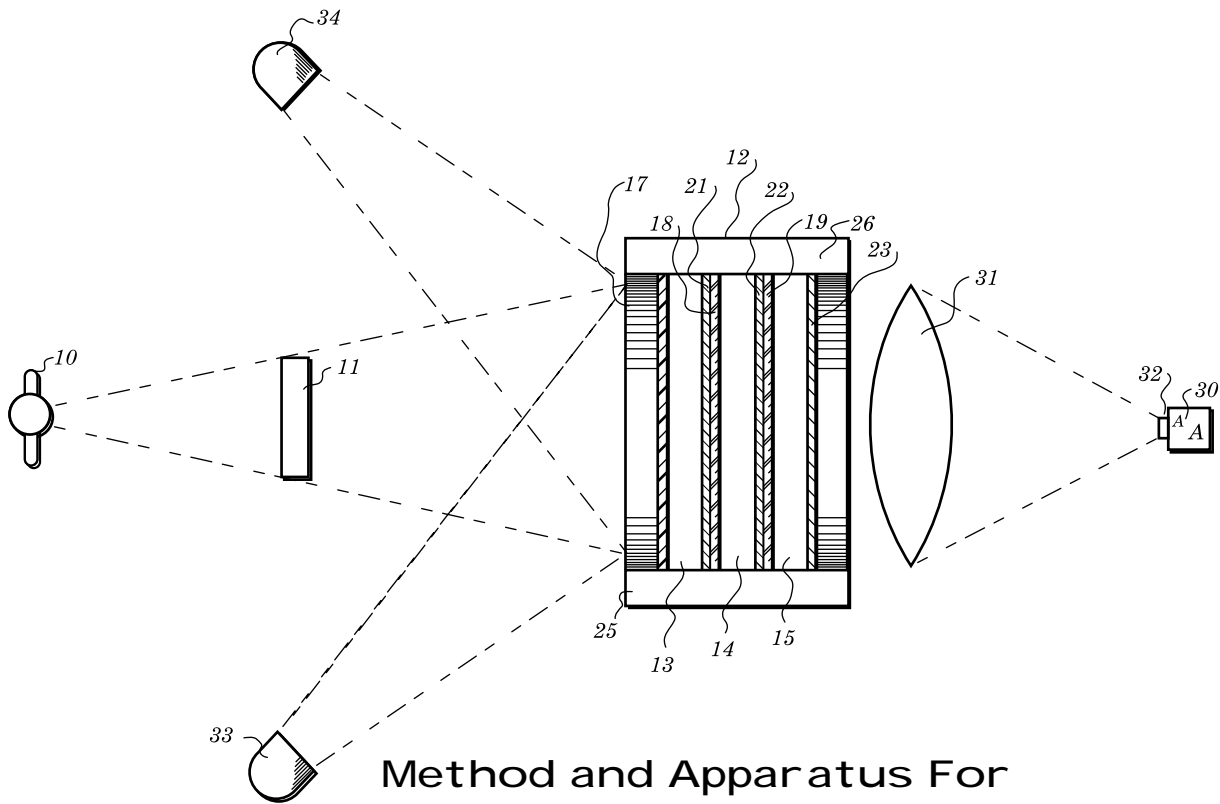


Welcome to the fourth Annual Patent and Licensing Awards Ceremony! We are here this evening to honor our outstanding innovators for their achievements during the past year—a year during which our nation has been shaken by serious challenges to our sense of safety and security. The innovative contributions these men and women have made in their respective fields of science and engineering are the kind that will make a difference to our nation in both the near and long term. While their achievements span a broad spectrum of technologies, they all bear the hallmark of the Laboratory since its inception—scientific discovery and technological innovation that make a difference for our nation and for the world!

I am pleased to have this opportunity to recognize these creative and hard-working men and women who have demonstrated their willingness to contribute to technology transfer activities at the Laboratory by protecting our intellectual property assets. It is through our researchers' efforts to file copyright assertions and patent applications that the Laboratory gains recognition and royalties for patents issued and technologies licensed. The Laboratory has a history of developing technologies that have inherent scientific value. The ingenuity of our innovators and the diligence of our technology transfer professionals demonstrate that our work also has economic value.

I extend congratulations on behalf of the entire Laboratory community to this evening's honorees for their achievements, and I encourage their continued participation in these activities. They are making outstanding contributions to the Laboratory and to society.

John C. Browne



Method and Apparatus For Producing Radiographs

The first patent obtained at Los Alamos National Laboratory was filed in 1945 in the names of Seth Neddermeyer and Donald Kerst, two original Los Alamos employees who were well-known for their creative and unrestrained experimentations into the explosive compression of materials. The patent covered an apparatus for conducting high-speed x-ray radiography of explosive detonations. No mention of Los Alamos appears in the published patent, as Los Alamos was a "secret city" when the patent issued in 1947. This invention was an early accomplishment of a research program that has continued for some 59 years and for which Los Alamos is internationally renowned. Today this program has culminated in the operation of the Dual Axis Radiographic Hydrodynamic Test facility (DARHT). Phase 1 of DARHT is now fully operational with the completion of the first x-ray machine. Phase 2 is scheduled for completion in 2002 with the installation of the second and more complex pulsed x-ray machine.

Abstracts of Recognized Patents

Listings are in accordance with issue dates from beginning to end of fiscal year 2001.

INVENTOR AWARDS 2001 ABSTRACTS

Methods of Forming and Using Porous Structures for Energy Efficient Separation of Light Gases by Capillary Condensation

Narasimhan Calamur, Martin E. Carrera, David J. Devlin, and Thomas A. Archuleta
U.S. Patent No. 6,039,792

An improved method and apparatus allow the separation of one or more condensable compounds from a mixture of two or more gases of differing volatilities by capillary fractionation in a membrane-type apparatus and a method of forming porous structures therefor. The invention includes methods of forming and using an apparatus consisting, at least in part, of a porous structure having capillary-type passages extending between a plurality of small openings on the first side and larger openings on a second side of the structure, the passages having been adapted to permit a condensed liquid to flow there-through substantially by capillary forces, whereby vapors from the mixture are condensed, at least in part, and substantially in and adjacent to the openings on the first side, and are caused to flow in a condensed liquid state, substantially in the absence of vapor, from the openings on the first side to the openings on the second side.

Method for Making Porous Zeolitic Films

Paul D. Ries, Michael M. Olken, Malcolm W. Warren II, and Robert C. Dye
U.S. Patent No. 6,124,027

A vapor deposition method provides for coating a substrate with a porous zeolitic film. The method includes two steps. The first step is to irradiate a zeolite with a pulsed laser beam to vaporize the zeolite in a plume adjacent to the zeolite. The second step is to intercept the plume on the substrate to form the porous zeolitic film. A piezoelectric substrate can be used to produce a chemical sensor.

Pressure Polymerization of Polyester

Charles J. Maurer, Gordon Shaw, and Vicky S. Smith
U.S. Patent No. 6,127,493

A polyester polymer or polyester copolymer is prepared under superatmospheric pressure conditions in a pipe or tubular reaction under turbannular flow conditions. Reaction material having a glycol equivalents to carboxylic acid equivalents mole ratio of from 1.0:1 to 1.2:1, together with a superatmospheric dense gaseous medium are fed concurrently to the reactor. Dicarboxylic acid and/or diol raw materials may be injected into any of the reaction zones in the process during operation to achieve the overall desired mole ratio balance.

Supported Metal Alloy Catalysts

Joseph Barrera and David C. Smith
U.S. Patent No. 6,132,695

A Group IV, V, or VI metal carbonitride is prepared by reacting a Group IV, V, or VI metal amide complex with ammonia to obtain an intermediate product. The intermediate product is heated to temperatures and for times sufficient to form a Group IV, V, or VI metal carbonitride.

Nonlinear Pulse Reshaping for Optical Fiber Transmission Systems

Ildar R. Gabitov, Darryl D. Holm, Benjamin P. Luce, and Arnold Mattheus
U.S. Patent No. 6,157,762

Nonlinear pulse reshaping for optical fiber transmission systems is obtained by utilizing nonlinear amplifying loop mirrors for recovering soliton pulses nonadiabatically deformed by losses. Input pulses are mapped into output pulses for segments of optical fiber followed by a combination of linear and nonlinear amplification. For a wide range of amplifier spacings, it is numerically established that a single optimal input pulse of soliton shape exists for each such spacing, which is well recovered at the output of the amplifier, containing only ~3% of continuous radiation.

Blood Storage Device and Method for Oxygen Removal

Mark W. Bitensky and Tatsuro Yoshida
U.S. Patent No. 6,162,396

A storage device and method permit the long-term storage of blood and, more particularly, a blood storage device and method that are capable of removing oxygen from the stored blood to thereby prolong the storage life of the deoxygenated blood.

Method and Apparatus for Adapting Steady Flow with Cyclic Thermodynamics

Gregory W. Swift, Robert S. Reid, and William C. Ward
U.S. Patent No. 6,164,073

An energy transfer apparatus includes a resonator for supporting standing acoustic waves at a selected frequency with a steady flow process fluid thermodynamic medium and a solid medium having heat capacity. The fluid medium and the solid medium are disposed within the resonator for thermal contact there between and for relative motion there between. The relative motion is produced by first producing a steady velocity component and also producing an oscillating velocity component at the selected frequency and concomitant wavelength of the standing acoustic wave. The

oscillating velocity and associated oscillating pressure component provide energy transfer between the steady flow process fluid and the solid medium as the steady flow process fluid moves through the resonator.

Apparatus and Method for Simultaneous Recovery of Hydrogen from Water and from Hydrocarbons

R. Scott Willms and Stephen A. Birdsell
U.S. Patent No. 6,165,438

Apparatus and a method permit simultaneous recovery of hydrogen from water and from hydrocarbon feed material. The feed material is caused to flow over a heated catalyst which fosters the water-gas shift reaction ($\text{H}_2\text{O} + \text{CO} \rightleftharpoons \text{H}_2 + \text{CO}_2$), and the methane steam reforming reaction ($\text{CH}_4 + \text{H}_2\text{O} \rightleftharpoons 3\text{H}_2 + \text{CO}$). Both of these reactions proceed only to partial completion. However, by use of a Pd/Ag membrane, which is exclusively permeable to hydrogen isotopes in the vicinity of the above reactions, and by maintaining a vacuum on the permeate side of the membrane, product hydrogen isotopes are removed and the reactions are caused to proceed further toward completion.

Reduction of Surface Leakage Current by Surface Passivation of CdZnTe and Other Materials Using Hyperthermal Oxygen Atoms

Mark A. Hoffbauer and
Thomas H. Prettyman
U.S. Patent No. 6,168,967

A reduction of surface leakage current is obtained by surface passivation of Cd_{1-x}Zn_xTe and other materials using hyperthermal oxygen atoms. Surface effects are important in the performance of CdZnTe room-temperature radiation detectors used as spectrometers since the dark current is often dominated by surface leakage. A process using high-kinetic-energy, neutral oxygen atoms (~3 eV) treats the surface of CdZnTe detectors at or near ambient temperatures. Improvements in detector performance include significantly reduced leakage current which results in lower detector noise and greater energy resolution for radiation measurements of gamma- and x-rays, thereby increasing the accuracy and sensitivity of measurements of radionuclides having complex gamma-ray spectra, including special nuclear materials.

Polymers for Metal Extractions in Carbon Dioxide

Joseph M. Desimone, William Tumas, Kimberly R. Powell, T. Mark McCleskey, Timothy J. Romack, James B. McClain, and Eva R. Birnbaum
U.S. Patent No. 6,176,895

A composition useful for the extraction of metals and metalloids comprises (a) carbon dioxide fluid (preferably liquid or supercritical carbon dioxide); and (b) a polymer in the carbon dioxide, the polymer having bound thereto a ligand that binds the metal or metalloid; with the ligand bound to the polymer at a plurality of locations along the chain length thereof (i.e., a plurality of ligands are bound at a plurality of locations along the chain length of the polymer). The polymer is preferably a copolymer, and the polymer is preferably a fluoropolymer such as fluoroacrylate polymer. The extraction method includes contacting a first composition containing a metal or metalloid to be extracted with a second composition, the second composition being as described above; and then extracting the metal or metalloid from the first composition into the second composition.

Apparatus and Method for Remote, Noninvasive Characterization of Structures and Fluids Inside Containers

Gregory Kaduchak and
Dipen N. Sinha
U.S. Patent No. 6,186,004

An apparatus and method enable the remote, noncontact evaluation of structures and containers at large distances (on the order of several meters) in air. An air-coupled, parametric acoustic array excites resonance vibrations of elastic, fluid-filled vessels and structural members. A nonlinear mixing process in the air medium transforms highly directional, narrow beamwidth, higher acoustic frequencies into lower acoustic frequencies suitable for vibrational excitation of common structures. The parametric array also has an advantage for nondestructive evaluation applications in that it is capable of producing a broader bandwidth than typical linear devices, such as speakers and ultrasonic transducers.

Femtosecond Chirp-Free Transient Absorption Method and Apparatus

Duncan W. McBranch and
Victor I. Klimov
U.S. Patent No. 6,191,861

A method and apparatus for femtosecond transient absorption uses phase-sensitive detection, spectral scanning and simultaneous control of a translation stage to obtain TA spectra information having at least a sensitivity two orders of magnitude higher than that for single-shot methods, with direct, simultaneous compensation for chirp as the data is acquired.

Deposition of Coatings Using an Atmospheric Pressure Plasma Jet

Steve E. Babayan, Gary S. Selwyn,
and Robert F. Hicks
U.S. Patent No. 6,194,036

Coatings are deposited using an atmospheric pressure plasma jet. The use of a nonthermal source that is capable of operation at 760 torr is demonstrated. As an example of the application of the present invention, a helium/oxygen gas mixture is introduced into the annular region between two coaxial electrodes driven by a 13.56 MHz radio frequency (rf) source at between 40 and 500 W to produce a stable plasma jet. Silicon dioxide films are deposited by introducing tetraethoxysilane (TEOS) into the effluent stream.

Lithium Niobate Single-Crystal and Photo-Functional Device

Venkatraman Gopalan, Terence E. Mitchell, Kenji Kitamura, and Yasunori Furokawa
U.S. Patent No. 6,195,197

A lithium niobate single-crystal requires a low voltage of not larger than 10 kV/nm for its ferroelectric polarization inversion and for which the polarization can be periodically inverted with accuracy even at such a low voltage, and a photo-functional device comprising the crystal. The crystal has a molar fraction of $\text{Li}_2\text{O}/(\text{Nb}_2\text{O}_5 + \text{Li}_2\text{O})$ falling between 0.49 and 0.52. The photo-functional device can convert a laser ray being incident thereon.

Compressive Annealing of Superconductive Tapes

Yuntian T. Zhu, Patrick S. Baldonado, John F. Bingert, Terry G. Holesinger, and Dean E. Peterson
U.S. Patent No. 6,195,870

Superconductor tapes are annealed under uniaxial pressure, yielding significant improvement in the resultant critical current density. This thermomechanical processing technique obtains improved critical currents with fewer processing steps.

Method for Producing Ultrafine-Grained Materials Using Repetitive Corrugation and Straightening

Yuntian T. Zhu, Terry C. Lowe,
Honggang Jiang, and
Jianyu Huang
U.S. Patent No. 6,197,129

The grain structure and the hardness and strength properties of a metal or metal alloy workpiece are improved. The workpiece is subjected to forces that corrugate and then straighten the workpiece. These steps are repeated until an ultrafine-grained product having improved hardness and strength is produced.

Molybdenum Disilicide Composites

Robert P. Rodriguez and
John J. Petrovics
U.S. Patent No. 6,197,247

Molybdenum disilicide/ β' - $\text{Si}_{6-z}\text{Al}_z\text{O}_z\text{N}_{8-z}$ composites, wherein $z =$ a number from greater than 0 to about 5, composites are made by use of *in situ* reactions among a-silicon nitride, molybdenum disilicide, and aluminum. Molybdenum disilicide within a molybdenum disilicide/ β' - $\text{Si}_{6-z}\text{Al}_z\text{O}_z\text{N}_{8-z}$ eutectoid matrix is the resulting microstructure.

Fuel Cell with Metal Screen Flow-Field

Mahlon S. Wilson and Christine Zawodzinski

U.S. Patent No. 6,207,310

Polymer electrolyte membrane (PEM) fuel cells include a metal mesh defining a rectangular flow-field pattern having an inlet at a first corner and an outlet at a second corner located on a diagonal from the first corner, wherein all flow paths from the inlet to the outlet through the square flow field pattern are equivalent to uniformly distribute the reactant over the CMA. A bipolar plate electrically connects adjacent fuel cells, where the bipolar plate includes a thin metal foil having an anode side and a cathode side; a first metal mesh on the anode side of the thin metal foil; and a second metal mesh on the cathode side of the thin metal foil

Rapid Production of Optimal Quality, Reduced-Resolution Representations of Very Large Databases

David E. Sigesti, Mark Duchaineau, Mark C. Miller, Murray A. Wolinsky, Charles H. Aldrich III, and Mark B. Mineev-Weinstein
U.S. Patent No. 6,208,997

View space representation data is produced in real time from a world space database representing terrain features. The world space database is first preprocessed. A

database is formed having one element for each spatial region corresponding to a finest selected level of detail. A multiresolution database is then formed by merging elements and a strict error metric is computed for each element at each level of detail that is independent of parameters defining the view space. The multiresolution database and associated strict error metrics are then processed in real time for real time-frame representations.

Lithium Tantalate Single-Crystal and Photo-Functional Device

Venkatraman Gopalan, Terence E. Mitchell, Kenji Kitamura, and Yasunori Furokawa
U.S. Patent No. 6,211,999

A lithium tantalate single-crystal requires a low voltage of not larger than 10 kV/mm for its ferroelectric polarization inversion and the polarization can be periodically inverted with accuracy even at such a low voltage. A new photo-functional device includes the crystal. The crystal has a molar fraction of $\text{Li}_2\text{O}/(\text{Ta}_2\text{O}_5 + \text{Li}_2\text{O})$ falling between 0.492 and 0.50. The functional device can convert a laser ray being incident thereon or can be used as a physical memory.

Thermally Tolerant Multilayer Metal Membrane

Robert C. Dye and Ronny C. Snow
U.S. Patent No. 6,214,090

A composite metal membrane includes a first metal layer of a Group IVB or Group VB metal sandwiched between two layers of a Group VIIIB metal selected from the group consisting of palladium, platinum, nickel, rhodium, iridium, cobalt, and alloys thereof, and a non-continuous layer of a metal chalcogenide upon one layer of the Group VIIIB metal. A process for the recovery of hydrogen from a gaseous mixture uses such a composite membrane

Low-Smoke Pyrotechnic Compositions

Michael A. Hiskey, David E. Chavez, and Darren L. Naud
U.S. Patent No. 6,214,139

A low-smoke producing pyrotechnic composition includes a high-nitrogen content, low-carbon content energetic material, an oxidant, and a colorant together with the use of selected metal salts of a high-nitrogen content, low-carbon content energetic material as the colorant.

Hafnium Radioisotope Recovery from Irradiated Tantalum

Wayne A. Taylor and
David J. Jamriska
U.S. Patent No. 6,214,301

Hafnium is recovered from irradiated tantalum by combining an aqueous solution of a calcium compound with a solution of dissolved tantalum. Hafnium, lanthanide, and insoluble calcium complexes are precipitated from the combined solution to obtain a first precipitate. The first precipitate of hafnium, lanthanide and calcium complexes is contacted with at least one fluoride ion complexing agent to form a solution from which lanthanides and calcium are selectively adsorbed. Fluoride ion complexing agent products are separated from hafnium by adding an aqueous solution of ferric chloride to the solution to precipitate hafnium and iron. The precipitate containing the hafnium and iron is selectively dissolved in acid to obtain an acid solution of hafnium and iron; and the iron is adsorbed from the acid solution of hafnium and iron by anionic exchange. The ion exchanged hafnium solution is dried to obtain hafnium isotopes.

Localized Electrical Fine Tuning of Passive Microwave and Radio Frequency Devices

Alp T. Findikoglu
U.S. Patent No. 6,216,020

The localized electrical fine tuning of passive multiple element microwave or RF devices is obtained by depositing a nonlinear dielectric material onto predetermined areas of a substrate containing a device. An appropriate electrically conductive material is deposited over predetermined areas of the nonlinear dielectric and the signal line of the device for providing electrical contact with the nonlinear dielectric. Individual, adjustable bias voltages are applied to the electrically conductive material to allow localized electrical fine tuning of the devices.

Atmospheric-Pressure Plasma Decontamination/Sterilization Chamber

Hans W. Herrmann and
Gary S. Selwyn
U.S. Patent No. 6,228,330

An atmospheric-pressure plasma decontamination/sterilization chamber enables the decontamination of sensitive equipment and materials, such as electronics, optics and national treasures, which have been contaminated with chemical and/or biological warfare agents, such as anthrax, mustard blistering agent, VX nerve gas, and the like. There is currently

no acceptable procedure for decontaminating such equipment. Reactive gases containing atomic and metastable oxygen species are generated by an atmospheric-pressure plasma discharge in a He/O₂ mixture and directed into the region of these items resulting in chemical reaction between the reactive species and organic substances. This reaction typically kills and/or neutralizes the contamination without damaging most equipment and materials.

High Resolution Non-Contact Interior Profiler

Martin S. Piltch, R. Alan Patterson,
Gerald W. Leeches,
John Van Nierop, and John J. Teti
U.S. Patent No. 6,229,617

The interior surfaces of devices such as vessels having a single entry port by launching laser energy into the vessel. The light reflected from the interior surfaces is interfered with reference laser energy to produce an interference pattern. This interference pattern is analyzed to reveal information about the condition of the interior surfaces of the device inspected.

Depth Enhancement of Ion Sensitized Data

Bruce C. Lamartine
U.S. Patent No. 6,230,071

A durable data storage medium is capable of storing digital or alphanumeric characters as well as graphical shapes or characters. The durable data storage medium includes a substrate having etched characters, the substrate characterized as containing detectable residual amounts of ions used in the preparation process.

Composite Bipolar Plate for Electrochemical Cells

Mahlon S. Wilson and
Deanna N. Busick
U.S. Patent No. 6,248,467

A bipolar separator plate for fuel cells consists of a molded mixture of a vinyl ester resin and graphite powder. The material is inexpensive, electrically conductive, lightweight, strong, corrosion resistant, easily mass produced, and relatively impermeable to hydrogen gas. The addition of certain fiber reinforcements and other additives can improve the properties of the composite material without significantly increasing its overall cost.

Method for Measuring Lead Concentrations in Blood

Nicholas S. Nogar
U.S. Patent No. 6,248,592

Lead concentrations in blood are measured using resonant laser ablation to analyze $\leq 1 \mu\text{L}$ (or equivalent mass) samples of blood for lead content. A typical finger prick, for example, yields about 10 μL . Solid samples may also readily be analyzed by resonant laser ablation. The sample is placed on a lead-free, electrically conducting substrate and irradiated with a single, focused laser beam that simultaneously vaporizes, atomizes, and resonantly ionizes an analyte of interest in a sample. The ions are then sorted, collected and detected using a mass spectrometer.

Nuclear Isomers as Neutron and Energy Sources

Andre F. Michaudon
U.S. Patent No. 6,252,921

The use of N-isomers as a source of energy and of neutrons, and the use of K-isomers as a source of energy when associated with a source of neutrons is contemplated. The lifetimes for the shape isomers are likely to be small but may be increased by effects like the odd-even effects already observed for fission isomers. K-isomers have been observed and investigated. If N-isomers are found with the required properties (especially with sufficiently long lifetimes) and

produced in sufficient quantities, portable neutron sources more intense than existing neutron sources could be obtained. Neutrons from these sources could also be used to produce energy by using a variety of neutron-induced reactions in selected materials added to the N-isomers, such as K-isomers, which release energy after interacting with neutrons.

Pleated Metal Bipolar Assembly

Mahlon S. Wilson and
Christine Zawodzinski
U.S. Patent No. 6,255,012

A thin, low-cost, bipolar plate for an electrochemical cell is formed from a polymer support plate with first flow channels on a first side of the support plate and second flow channels on a second side of the support plate where the first flow channels and second flow channels have intersecting locations and have a depth effective to form openings through the support plate at the intersecting locations. A first foil of electrically conductive material is pressed into the first flow channels. A second foil of electrically conductive material is pressed into the second flow channels so that electrical contact is made between the first and second foils at the openings through the support plate. A particular application of the bipolar plate is in polymer electrolyte fuel cells.

Preparation of $^{13}\text{C}/^{15}\text{N}$ -Labeled Oligomers Using Polymerase Chain Reaction

Xian Chen, Goutam Gupta, and E. Morton Bradbury
U.S. Patent No. 6,258,567

$^{13}\text{C}/^{15}\text{N}$ -labeled DNA oligomers are prepared using the polymerase chain reaction (PCR). Multiple copies of a blunt-ended duplex are cloned into a plasmid, each copy containing the sequence of interest and restriction Hinc II sequences at both the 5' and 3' ends. PCR using bi-directional primers and uniformly $^{13}\text{C}/^{15}\text{N}$ -labeled dNTP precursors generates labeled DNA duplexes containing multiple copies of the sequence of interest. Such labeled duplexes find significant applications in multinuclear magnetic resonance spectroscopy.

Method for Producing Ceramic Particles and Agglomerates

Jonathan Phillips, Seth S. Gleiman, and Chun-Ku Chen
U.S. Patent No. 6,261,484

Spherical and irregularly shaped dense particles of ceramic oxides have a controlled particle size and particle size distribution. An aerosol containing precursor particles of oxide ceramics is directed into a plasma. As the particles flow through the hot zone of the plasma, they melt, collide, and join to form larger particles. If these larger particles remain in the hot zone,

they continue melting and acquire a spherical shape that is retained after they exit the hot zone, cool down, and solidify. If they exit the hot zone before melting completely, their irregular shape persists and agglomerates are produced. The size and size distribution of the dense product particles can be controlled by adjusting several parameters, the most important in the case of powder precursors appears to be the density of powder in the aerosol stream that enters the plasma hot zone.

Large Area Atmospheric-Pressure Plasma Jet

Gary S. Selwyn, Ivars Henins, Steve E. Babayan, and Robert F. Hicks
U.S. Patent No. 6,262,523

A large area atmospheric-pressure plasma jet that can be operated at atmospheric pressure and near room temperature using 13.56 MHz rf power produces a gas-phase effluent no hotter than 250°C at an applied power of about 300 W and shows distinct non-thermal characteristics. In the simplest design, two planar, parallel electrodes are employed to generate a plasma in the volume there between. A "jet" of long-lived metastable and reactive species that is capable of rapidly cleaning or etching metals and other materials is generated which extends up to 8 inches beyond the open end of the electrodes. Films and coatings may also be removed by these species.

Narrowband High Temperature Superconducting Receiver for Low Frequency Radio Waves

David W. Reagor
U.S. Patent No. 6,263,189

An underground communicating device has a low-noise SQUID using high temperature superconductor components connected to detect a modulated external magnetic flux for outputting a voltage signal spectrum that is related to the varying magnetic flux. A narrow bandwidth filter may be used to select a portion of the voltage signal spectrum that is relatively free of power line noise to output a relatively low noise output signal when operating in a portion of the electromagnetic spectra where such power line noise exists. A demodulator outputs a communication signal, which may be an FM signal, indicative of a modulation on the modulated external magnetic flux.

Multiple Feed Powder Splitter

Gary K. Lewis and Richard M. Less
U.S. Patent No. 6,263,918

A solid fabrication system such as the directed light fabrication (DLF) process, produces a uniform powder flow to nozzles when creating solid structures. In the DLF process, gas entrained powders are passed through the focal point of a moving high-power laser light which fuses the particles in the powder to a surface being built up in layers. A

uniform flow of gas entrained powders is provided to the nozzles of the DLF system. The device comprises a series of modular splitters which are slidably interconnected and contain an integral flow control mechanism. The device can take the gas entrained powder from between one to four hoppers and split the flow into eight tubular lines which feed the powder delivery nozzles of the DLF system.

Enhanced Electrodes for Solid State Gas Sensors

Fernando H. Garzon and
Eric L. Brosha
U.S. Patent No. 6,277,256

A solid state gas sensor generates an electrical potential between an equilibrium electrode and a second electrode indicative of a gas to be sensed. A solid electrolyte substrate has the second electrode mounted on a first portion of the electrolyte substrate and a composite equilibrium electrode including conterminous transition metal oxide and Pt components mounted on a second portion of the electrolyte substrate. The composite equilibrium electrode and the second electrode are electrically connected to generate an electrical potential indicative of the gas that is being sensed.

DNA Polymorphism Identity Determination Using Flow Cytometry

John P. Nolan, Paul S. White, and
Hong Cai
U.S. Patent No. 6,287,766

The identity of DNA polymorphism is determined using flow cytometry. Primers designed to be immobilized on microspheres are allowed to anneal to the DNA strand under investigation, and are extended by either DNA polymerase using fluorescent dideoxynucleotides or ligated by DNA ligase to fluorescent reporter oligonucleotides. The fluorescence of either the dideoxynucleotide or the reporter oligonucleotide attached to the immobilized primer is measured by flow cytometry, thereby identifying the nucleotide polymorphism on the DNA strand.

Preparation of 2-Hydroxy-5-Oxoproline and Analogs Thereof

Rodolfo A. Martinez and
Pat J. Unkefer
U.S. Patent No. 6,288,240

The compound 2-hydroxy-5-oxoproline and analogs thereof may be used to produce an increase in carbon dioxide fixation, growth, dry weight, nutritional value (proteins and amino acids), nodulation and nitrogen fixation and photosynthetically derived chemical energy when applied to

plants through their roots and/or through their foliar portions. An essentially quantitative chemical synthesis for this compound is performed in a single step reaction of Fremy's Salt (potassium nitrosodisulphonate) with either glutamine or 2-pyrrolidone-5-carboxylic acid. Fremy's salt (potassium nitrosodisulphonate) is available commercially, or can be readily synthesized.

Fluid Sampling Tool

Roger G. Johnston,
Anthony R. E. Garcia, and
Ronald K. Martinez
U.S. Patent No. 6,293,163

A rotatable tool collects fluid through the wall of a container. The tool includes a fluid collection section with a cylindrical shank having an end portion for drilling a hole in the container wall when the tool is rotated, and a threaded portion for tapping the hole in the container wall. A passageway in the shank in communication with at least one radial inlet hole in the drilling end and an opening at the end of the shank is adapted to receive fluid from the container. The tool also includes a cylindrical chamber affixed to the end of the shank opposite to the drilling portion thereof for receiving and storing fluid passing through the passageway. The tool also includes a fluid extractor section for extracting fluid samples from the fluid collecting section.

Distinguished Awards

Distinguished Patent Award

The Distinguished Patent Award honors inventors whose patented invention exhibits outstanding innovation. The award is selected by the Laboratory Fellows and recognizes a premier patent exemplifying significant technical advance, adaptability to public use, and noteworthy value to the mission of Los Alamos National Laboratory.

The patent and the inventor recognized for this award reflect the Laboratory's stalwart tradition of superior technical innovation and creativity.

2001 Award Winners

Hans Herrman and Gary Selwyn of the Physics Division are co-recipients of the Distinguished Patent Award for their patent on the "Atmospheric-Pressure Plasma Decontamination/Sterilization Chamber." Their invention includes a decontamination/sterilization chamber that is useful for decontaminating sensitive equipment and materials, such as electronics, optics, and national treasures that have been contaminated with chemical and/or biological warfare agents, such as anthrax, mustard blistering agent, and VX nerve gas. Items to be sterilized are supported inside the decontamination/sterilization chamber and exposed to atomic and metastable oxygen species generated using an atmospheric

pressure plasma discharge in a helium/oxygen mixture. The chemical reaction between the reactive species and the contaminating species typically kills (or neutralizes) these species without damaging the equipment or materials since no significant number of ions are present. The plasma gases are recirculated through a closed-loop system to minimize the loss of helium and the possibility of escape of aerosolized harmful substances.

In view of the events of September 11 through November 2001, an inexpensive and nondestructive, yet effective method for decontamination/sterilization has become essential for implementing our country's mission of defending against terrorist attacks. This award winning technology is most timely since it provides all of these features in a simple apparatus. exclusive license.

Distinguished Licensing Award

The Distinguished Licensing Award recognizes an innovator who proactively engages in commercialization activities at Los Alamos National Laboratory and has had a positive impact on the Laboratory's Licensing Program. This individual, by example, demonstrates outstanding success in transferring Laboratory-developed technologies to the public and private sectors. In addition, the recipient's commercialization track record has served to enhance the reputations of both the University of California and the Laboratory.

Nominees for this award are evaluated based on ongoing active engagement in the licensing process; active participation in the promotion of their technologies; number of technologies licensed; number of licenses per technology; and support for multiple uses of the licensed technologies (private and public).

The recipient of this distinguished award is a champion for the Laboratory's licensing program and is recognized for his or her role in confirming the benefits of proactive technology commercialization activities.

2001 Award Winner

Dipen Sinha of the Materials Science and Technology Division is the recipient of this year's Licensing Award. His work in application of acoustic interferometry in non-destructive testing and evaluation is widely recognized by industry and other researchers throughout the world. His dedication to this field of research has resulted in 17 new invention disclosures, nine of which have issued as U.S. patents. To date, two northern New Mexico startup companies have formed around Dipen's portfolio of work, and two other companies have licensed one or more of Dipen's patents. These companies are applying Dipen's work in applications as diverse as biomedicine, oil and gas exploration, and monitoring cryogenic gases. Dipen has been an active participant in the licensing process and is credited by the licensing companies as playing a crucial role in their efforts to bring products to market. His exemplary work sets a standard of excellence in support of the Laboratory's technology transfer efforts.

Licensing Growth

The intellectual property generated by Los Alamos National Laboratory researchers in the form of patents and copyrights is vital to the performance of our stockpile stewardship mission. In addition, the Laboratory has successfully leveraged these intellectual assets to attract funding from federal and private sponsors, form strategic alliances with private industry, and foster lucrative technology transfer activities.

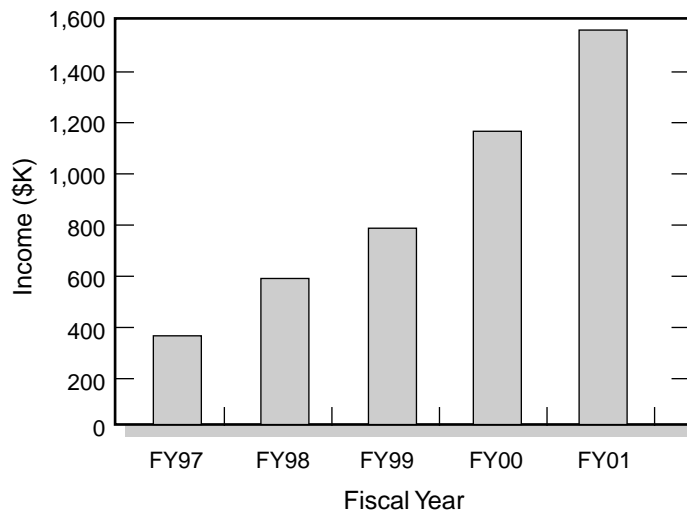
In recent years, federally funded research has become an increasingly important source of innovation needed by U.S. industry to stay competitive. Private industry recognizes that Los Alamos National Laboratory is a reservoir of extraordinary scientific talent and cutting-edge technology. For the past six years, the Laboratory's Licensing Program has facilitated

the transfer of Laboratory-developed technologies to the private sector through proactive commercialization of our intellectual property portfolio. The new products and services being created by our licensees capitalize on the key technical advances developed by our world-class researchers. In addition to the benefit to U.S. economic competitiveness, these product and service offerings enhance the reputation of the Laboratory as a premier provider of outstanding technology innovations.

The Licensing Program currently manages over 150 active commercial licenses. In addition, the Laboratory's active license portfolio contains over 600 noncommercial licenses with academia, government entities, and other nonprofit organizations. In the last few years, the program has witnessed accelerated growth, due in large part to the heightened awareness and active participation of the Laboratory's technical staff in commercialization activities.

Overall, the Licensing Program has generated over \$6 million in licensing income. Eighty-five percent of this income is redistributed to the inventors and to the technical divisions for scientific research and development, technology transfer activities, and education programs at the Laboratory.

Annual Licensing Income



Royal ty Recipients

Anderson, Claes

Copyright:

Web Based Consensus Building and Conflict Clarification

Arendt, Paul

Patent:

High Temperature Superconducting Thick Films

Patent:

Superconducting Composite Structures

Bai, Ying

Copyright:

MiniGrand Family

Barbe, Michael

Patent:

Laser Production of Articles from Powders

Barrett, Christopher

Copyright:

TRansportation ANalysis and SIMulation System

Barton, Jerome

Patent:

Apparatus and Method for Providing Pulsed Fluids

Beckman, Richard

Copyright:

TRansportation ANalysis and SIMulation System

Berkbigler, Kathryn

Copyright:

TRansportation ANalysis and SIMulation System

Bigio, Irving

Patent:

Apparatus and Method for Spectroscopic Analysis of Scattering Media

Billen, James

Copyright:

RFQ Design and Manufacturing Codes

Copyright:

Phase and Radial Motion in Electron Linear Accelerators

Bisset, Keith

Copyright:

TRansportation ANalysis and SIMulation System

Bitensky, Mark

Patent:

Method Using CO for Extending the Useful Shelf-Life of Refrigerated Red Blood Cells

Patent:

Method Using Oxygen Removal for Extending the Useful Shelf-Life of Refrigerated Red Blood Cells

Patent:

Prolonged Cold Storage of Red Blood Cells by Oxygen Removal and Additive Usage

Boenig, Heinrich

Patent:

Fault Current Limiter and Alternating Current Circuit Breaker

Bourret, Steven

Patent:

Fault Current Limiter and Alternating Current Circuit Breaker

Copyright:

MiniGrand Family

Bowles, Jeffrey

Copyright:

WIN-CTEN

Bradley, Jonathan*Patent:*

Storage and Retrieval of Large Digital Images

Brunson, Glenn*Copyright:*

WIN-CTEN

Bush, Brian*Copyright:*

TRansportation ANalysis and SIMulation System

Butterfield, Kenneth*Copyright:*

NAVI-2

Carey, James*Patent:*

Detection of Alkali-Silica Reaction Swelling in Concrete by Staining

Patent:

Detection of Concrete Deterioration by Staining

Castro, Alonso*Patent:*

Method for the Detection of Specific Nucleic Acid Sequences by Polymerase Nucleotide Incorporation

Chen, Liaohai*Patent:*

Method for Detecting Biological Agents

Claytor, Thomas*Patent:*

Fluid Density and Concentration Measurement Using Noninvasive *In Situ* Ultrasonic Resonance Interferometry

Cohn, Judith*Copyright:*

Bioinformatics Toolkit

Cole, Dean*Patent:*

Method of Using 5,10,15,20-Tetrakis (4-Carboxyphenyl) Porphine for Detecting Cancers of the Lung

Patent:

Method of Using 5,10,15,20-Tetrakis (4-Carboxyphenyl) Porphine for Detecting Cancers of the Lung

Patent:

Method Using 5,10,15,20-Tetrakis (4-Carboxyphenyl) Porphine for Treating Cancers of the Lung

Cole, Roger*Copyright:*

The Experimental Physics and Industrial Control System (EPICS)

Copyright:

Hybrid K-Edge Densitometer Software

Collins, Michael*Copyright:*

Hybrid K-Edge Densitometer Software

Cournoyer, Michael*Copyright:*

Chemical Software Input (CSWI)

Crandall, Kenneth*Copyright:*

RFQ Design Codes (RFQUICK, CURLI, PARI, PARMTEQ)

Copyright:

RFQ Design & Manufacturing Codes (PARMTEQ, PARI, etc. + VANES, TIDIST, etc.)

Cremers, David*Patent:*

Laser Production of Articles from Powders

Dalesio, Leo*Copyright:*

The Experimental Physics and Industrial Control System

Davey, John*Patent:*

Catalyst Inks and Method of Application for Direct Methanol Fuel Cells

Davis, Anthony*Copyright:*

Flat Panel Amorphous Silicon High Resolution Computed Tomography-Data Acquisition Software

Copyright:

Flat Panel Amorphous Silicon High Resolution Computed Tomography-Data Processing Software

Copyright:

Flat Panel Amorphous Silicon High Resolution Digital Radiography

Dixon, Raymond*Patent:*

Production of Elongated Articles from Particulates

Eaton, Cynthia*Copyright:*

The Experimental Physics and Industrial Control System (EPICS)

Ehler, Deborah*Patent:*

Water-Soluble Polymers for Recovery of Metals from Solids

Estep, Robert

Copyright:

CTEN-FIT.EXE

Copyright:

WIN-CTEN.EXE

Copyright:

MAKE-MAT

Copyright:

BM DLL Dynamic Link
Library

Copyright:

LIST-LIB (object library)

Copyright:

TGS-FIT

Eubank, Stephen

Copyright:

TRansportation ANalysis and
SIMulation System

Foltyn, Stephen

Patent:

High Temperature Supercon-
ducting Thick Films

Patent:

Superconducting Composite
Structures

Gohdes, Joel

Patent:

Water-Soluble Polymers and
Compositions Thereof

Gottesfeld, Shimshon

Patent:

Air Breathing Direct Methanol
Fuel Cell

Patent:

Catalyst Inks and Method of
Application for Direct Metha-
nol Fuel Cells

Patent:

Preventing CO Poisoning in
Fuel Cells

Patent:

Methanol Sensor Operated in
Passive Mode

Patent:

Methanol Sensor Operated in
Driven Mode

Patent:

Flow Channel Device for
Electrochemical Cells

Groves, James

Patent:

Superconducting Composite
Structures

Guthrie, George

Patent:

Detection of Alkali-Silica
Reaction Swelling in Concrete
by Staining

Patent:

Superconducting Composite
Structures

Halbig, James

Copyright:

MiniGrand Family

Hamada, Michael

Patent:

Optimizing the Availability of
Buffered Industrial Process

Patent:

Genetic Algorithms for Find-
ing Optimal Bayesian Experi-
mental Designs Subject to
Time and Cost Constraints

Hammond, Mark

Patent:

DNA Fragment Sizing and
Sorting by Laser-Induced
Fluorescence

Hansen, Walter

Copyright:

MiniGrand Family

Harker, William

Copyright:

MiniGrand Family

Hill, Jeffrey

Copyright:

The Experimental Physics and
Industrial Control System
(EPICS)

Holesinger, Terry

Patent:

Superconducting Composite
Structures

Hollas, Charles

Copyright:

WIN-CTEN

Horley, Earl

Copyright:

Mechanical Drawings for
Super-High Efficiency Neu-
tron Coincidence

Howat, Andrew

Copyright:

SABRINA

Hsue, Sin-Tao

Copyright:

Hybrid K-Edge Densitometer
Software

Ianakiev, Kiril

Copyright:

MiniGrand Family

Jett, James

Patent:

Method for Rapid Base
Sequencing in DNA and RNA

Patent:

DNA Fragment Sizing and
Sorting by Laser-Induced
Fluorescence

Johnson, Jeffrey

Copyright:
SABRINA

Johnston, Roger

Patent:
Method for Establishing the
Presence of Salmonella
Bacteria in Eggs

Kane, Daniel

Patent:
Method and Apparatus for
Measuring the Intensity and
Phase of an Ultrashort Light
Pulse

Keating, Gordon

Copyright:
Web-Based Consensus Build-
ing and Conflict Clarification

Keller, Richard

Patent:
WIN-CTEN

Patent:
DNA Fragment Sizing and
Sorting by Laser-Induced
Fluorescence

Kelley, Thomas

Copyright:
PC/FRAM

Kersteins, Deborah

Copyright:
The Experimental Physics and
Industrial Control System
(EPICS)

Klosterbuer, Shirley

Copyright:
MiniGrand Family

Knight, Thomas

Patent:
Use of Prolines for Improving
Growth and Other Properties
of Plants and Algae

Konjevod, Goran

Copyright:
TRansportation ANalysis and
SIMulation System

Kozubal, Andrew

Copyright:
The Experimental Physics and
Industrial Control System
(EPICS)

Krick, Merlyn

Copyright:
MiniGrand Family

Kubicek, Deborah

Copyright:
TRansportation ANalysis and
SIMulation System

Kuske, Cheryl

Patent:
Method for Quantitating
DSDNA

Lamartine, Bruce

Patent:
Ultrahigh, Vacuum Focused,
Ion Beam Micromill and
Articles Therefrom

Patent:
Depth Enhancement of Ion
Sensitized Data

Less, Richard

Patent:
Multiple Feed Powder Splitter

Patent:
Rotary Powder Feedthrough
Apparatus

Patent:
Deposition Head for Laser

Lewis, Gary

Patent:
Multiple Feed Powder Splitter

Patent:
Rotary Powder Feedthrough
Apparatus

Patent:
Laser Production of Articles
from Powder

Patent:
Deposition Head for Laser

Patent:
Production of Elongated
Articles from Particulates

Loree, Thomas

Patent:
Apparatus and Method for
Spectroscopic Analysis of
Scattering Media

Lunsford, James

Patent:
Offset Stabilizer for Compara-
tor Output

Maheshwan, Sudha

Copyright:
Web-Based Consensus Build-
ing and Conflict Clarification

Marathe, Madhav

Copyright:
TRansportation ANalysis and
SIMulation System

Marrone, Babetta

Patent:
DNA Fragment Sizing and
Sorting by Laser-Induced
Fluorescence

Martin, John*Patent:*

WIN-CTEN

*Patent:*DNA Fragment Sizing and
Sorting by Laser-Induced
Fluorescence**Martin, Richard***Patent:*

Acoustic Cryocooler

Martinez, Rodolfo*Patent:*Preparation of 2-Hydroxy-5-
Oxoproline and Analogs
Thereof*Patent:*Use of Prolines for Improving
Growth and Other Properties
of Plants and Algae**Martz, Harry R., Jr.***Patent:*Optimizing the Availability of
a Buffered Industrial Process*Patent:*Genetic Algorithms for Find-
ing Optimal Bayesian Experi-
mental Designs Subject to
Time and Cost Constraints*Patent:*Computer Apparatuses and
Processes for Analyzing a
System Having False Start
Events**McBranch, Duncan***Patent:*Method for Detecting Biologi-
cal Agents**McFarland, Andrew***Patent:*

Quick-Change Filter Cartridge

Melton, Sheila*Copyright:*

LIST-LIB (object library)

Copyright:

WIN-CTEN.EXE

Copyright:

CTEN-FIT.EXE

Menlove, Howard*Patent:*Electrical Drawings for Super-
High Efficiency Neutron
Coincidence*Patent:*Mechanical Drawings for
Super-High Efficiency Neu-
tron Coincidence*Patent:*Cosmic-Ray Neutron Back-
ground Reduction Using
Localized Coincidence Veto
Neutron Counting**Migliori, Albert***Patent:*Intrinsically Irreversible Heat
Engine**Milewski, John***Patent:*Production of Elongated
Articles from Particulates**Moody, David***Patent:*Method of Using 5,10,14,20-
Tetrakis (4-Carboxyphenyl)
Porphine for Treating Cancers
of the Lung*Patent:*Method Using 5, 10, 15, 20-
Tetrakis (4-Carboxyphenyl)
Porphine for Treating Cancers
of the Lung**Moyzis, Robert***Patent:*

WIN-CTEN

Mullen, Kenneth*Patent:*Method of Quantitating
DSDNA**Mundt, Mark***Copyright:*

Bioinformatics Toolkit

Murray, William*Copyright:*

NAVI-2

Neuschaefer, George*Copyright:*RFQ Design Codes (RFQUICK,
CURLI, PARI, PARMTEQ)**Neutzler, Jay***Patent:*Annular Feed Air Breathing
Fuel Cell Stack**O'Callaghan, Aindra***Copyright:*Web Based Consensus Build-
ing and Conflict Clarification**Parker, Robert***Copyright:*

MiniGrand Family

Pelowitz, David*Copyright:*

MiniGrand Family

Pope, Noah*Patent:*Fluid Density and Concentra-
tion Measurement Using
Noninvasive *in Situ* Ultrasonic
Resonance Interferometry

Radebaugh, Raymond*Patent:*

Acoustic Cryocooler

Rasmussen, Steen*Copyright:*

Web Based Consensus Building and Conflict Clarification

Ratliff, Robert*Patent:*

WIN-CTEN

Reass, Pamela*Copyright:*

MiniGrand Family

Ren, Xiaoming*Patent:*

Methanol Sensor Operated in Passive Mode

Patent:

Methanol Sensor Operated in Driven Mode

Patent:

Flow Channel Device for Electrochemical Cells

Patent:

Air Breathing Direct Methanol Fuel Cell

Patent:

Catalyst Inks and Method of Application for Direct Methanol Fuel Cells

Ricke, Darrell*Copyright:*

Sequence Comparison Analysis (SCAN)

Copyright:

Bioinformatics Toolkit

Rickert, Marcus*Copyright:*

Transportation Analysis and Simulation System

Robison, Thomas*Patent:*

Water-Soluble Polymers for Recovery of Metals from Solids

Patent:

Water-Soluble Polymers and Compositions Thereof

Patent:

Process for the Displacement of Cyanide Ions from Metal Cyanide Complexes

Patent:

Water-Soluble Polymers for Recovery of Metal Ions from Aqueous Streams

Rodgers, John*Patent:*

Apparatus Having Reduced Background for Measuring Radiation Activity in Aerosol Particles

Patent:

Quick-Change Filter Cartridge

Romero, Amos*Copyright:*

MiniGrand Family

Romero, Phillip*Copyright:*

Transportation Analysis and Simulation System

Salazar, Steven*Copyright:*

MiniGrand Family

Sampson, Thomas*Copyright:*

PC/FRAM

Sauer, Nancy*Patent:*

Water-Soluble Polymers for Recovery of Metals from Solids

Selwyn, Gary*Patent:*

Particulate Contamination Removal from Wafers using Plasmas and Mechanical Agitation

Sheats, Matthew*Copyright:*

Flat-Panel Amorphous Silicon High-Resolution Computed Tomography-Data Processing Software (FLASHCT-DPS)

Shera, Brooks*Patent:*

WIN-CTEN

Patent:

Ordered Transport and Identification of Particles

Sinha, Dipen*Patent:*

Apparatus and Method for Non-Contact, Acoustic Resonance Determination of Intraocular Pressure

Patent:

Apparatus and Method for Comparing Corresponding Acoustic Resonances in Liquids

Patent:

Method for Establishing the Presence of Salmonella Bacteria in Eggs

Patent:

Ultrasonic Characterization of Single Drops of Liquids

Patent:

Method for Noninvasive Intracranial Pressure Measurement

Patent:

Noninvasive Identification of Fluids by Swept-Frequency Acoustic Interferometry

Patent:

Noninvasive Method for Determining the Liquid Level and Density Inside of a Container

Smith, Barbara

Patent:

Water-Soluble Polymers for Recovery of Metals from Solids

Patent:

Water-Soluble Polymers and Compositions Thereof

Patent:

Process for the Displacement of Cyanide Ions from Metal-Cyanide Complexes

Patent:

Water-Soluble Polymers for Recovery of Metal Ions from Aqueous Streams

Smith, Laron

Copyright:

TRANSPORTATION ANALYSIS AND SIMULATION SYSTEM

Stark, Peter

Patent:

Method of Quantitating DSDNA

Stewart, Carleton

Patent:

WIN-CTEN

Stretz, Paula

Copyright:

TRANSPORTATION ANALYSIS AND SIMULATION SYSTEM

Strobl, Karlheinz

Patent:

Apparatus and Method for Spectroscopic Analysis of Scattering Media

Stutz, Roger

Patent:

Ultrahigh Vacuum Focused Ion Beam Micromill and Articles Therefrom

Sweet, Martin

Copyright:

MiniGrand Family

Swift, Gregory

Patent:

Intrinsically Irreversible Heat Engine

Patent:

Acoustic Cryocooler

Tatsuro, Yoshida

Patent:

Method Using CO for Extending the Useful Shelf-Life of Refrigerated Red Blood Cells

Patent:

Method Using Oxygen Removal for Extending the Useful Shelf-Life of Refrigerated Red Blood Cells

Patent:

Prolonged Cold Storage of Red Blood Cells by Oxygen Removal and Additive Usage

Terwilliger, Thomas

Copyright:

SOLVE

Thomas, Sharon

Patent:

Catalyst Inks and Method of Application for Direct Methanol Fuel Cells

Unkefer, Pat

Patent:

Preparation of 2-Hydroxy-5-Oxoproline and Analogs Thereof

Patent:

Use of Prolines for Improving Growth and Other Properties of Plants and Algae

Van Riper, Kenneth

Copyright:

SABRINA

Veirs, Douglas

Patent:

Fluid Density and Concentration Measurement Using Noninvasive In Situ Ultrasonic Resonance Interferometry

Waldo, Geoffrey

Patent:

Method for Determining and Modifying Protein/Peptide Solubility

Patent:

Superfolder Green Fluorescent Protein (GFP). Mutations That Improve the Folding of GFP Fused to Poorly Folded Polypeptides

Patent:

Method for Determining Protein Solubility *In Vivo* and *In Vitro* Using Complementing Fragments of Green Fluorescent Protein

Wang, Hsing-Lin

Patent:

Method for Detecting Biological Agents

Wangler, Thomas

Copyright:

RFQ Design Codes (RFQUICK, CURLI, PARI, PARMTEQ)

West, James

Copyright:

SABRINA

Wheatley, John*Patent:*

Optical Probe for the Cytochrome P-450 Cholesterol Side Chain Cleavage Enzyme

Whitten, David*Patent:*

Method for Detecting Biological Agents

Williams, Michael*Copyright:*

TRansportation ANalysis and SIMulation System

Wilson, Mahlon*Patent:*

Fuel Cell Membrane Humidification

Patent:

Ambient Pressure Fuel Cell System

Patent:

Annular Feed Air Breathing Fuel Cell Stack

Patent:

Fuel Cell with Metal Screen Flow-Field

Patent:

Fuel Cell with Interdigitated Porous Flow-Fields

Patent:

Composite Biopolar Plate for Electromechanical Cells

Wray, William*Patent:*

Apparatus and Method for Non-Contact, Acoustic Resonance Determination of Intraocular Pressure

Wu, Xindi*Patent:*

High Temperature Superconducting Thick Films

Yamada, Tetsuji*Copyright:*

Higher Order Turbulence Model for Atmospheric Circulations and Random Particle Transport and Diffusion (HOTMAC/RAPTAD)

Young, Lloyd*Copyright:*

Phase and Radial Motion in Electron Linear Accelerators (PARMELA)

Copyright:

RFQ Design Codes (RFQUICK, CURLI, PARI, PARMTEQ)

Copyright:

TRACE 3-D

Zawodzinski, Christine*Patent:*

Fuel Cell with Metal Screen Flow-Field

Zelenay, Piotr*Patent:*

Catalyst Inks and Method of Application for Direct Methanol Fuel Cells

Contact List

Outstanding innovation is the cornerstone that enables patents, copyrights, licenses, and the ensuing entrepreneurial ventures to occur. The teams cited below are key to the Laboratory's activities required to protect our intellectual property and encourage the transfer of technology to the private sector. For questions or assistance please contact any of these individuals.

Industrial Business Development Division Office

Division Leader (Acting)
Donna M. Smith, 667-9473

Industrial Partnerships Office

Program Manager (Acting)
Jerome J. Garcia, 665-4842

Intellectual Property Management

Team Leader
Bruce Lamartine, 665-2366

Intellectual Property Specialists
Julie Allen, 665-2743
Christine Ramos, 665-6846

Intellectual Property Administrators
Patty Duran, 667-2499
Annabelle Torres, 667-8129

Licensing

Team Leader (Acting)
John Mott, 665-0883

Licensing Executives
Laura Barber, 667-9266
John Russell, 665-3941

Licensing Associates
Charles Gibson, 665-6697
Kathleen Herrera, 667-5844

Licensing Specialist
Susan Brockway, 665-7677

Licensing Administrators
Debbie Roybal, 665-6704
Sharon Trujillo, 665-6708

Laboratory Counsel

Laboratory Counsel
Frank P. Dickson, 667-3970

Intellectual Property Office

Group Leader
Ray G. Wilson, 665-3112

Patent Attorneys
Bruce H. Cottrell, 667-9168
Samuel M. Freund, 667-9701
David J. Salazar, 667-3766
Milton D. Wyrick, 665-3659

Patent Agent
Samuel L. Borkowsky, 665-3111

**Industrial Business
Development Division**
<http://www.lanl.gov/partnerships/>

Laboratory Counsel
<http://www.genlaw.lanl.gov/>

