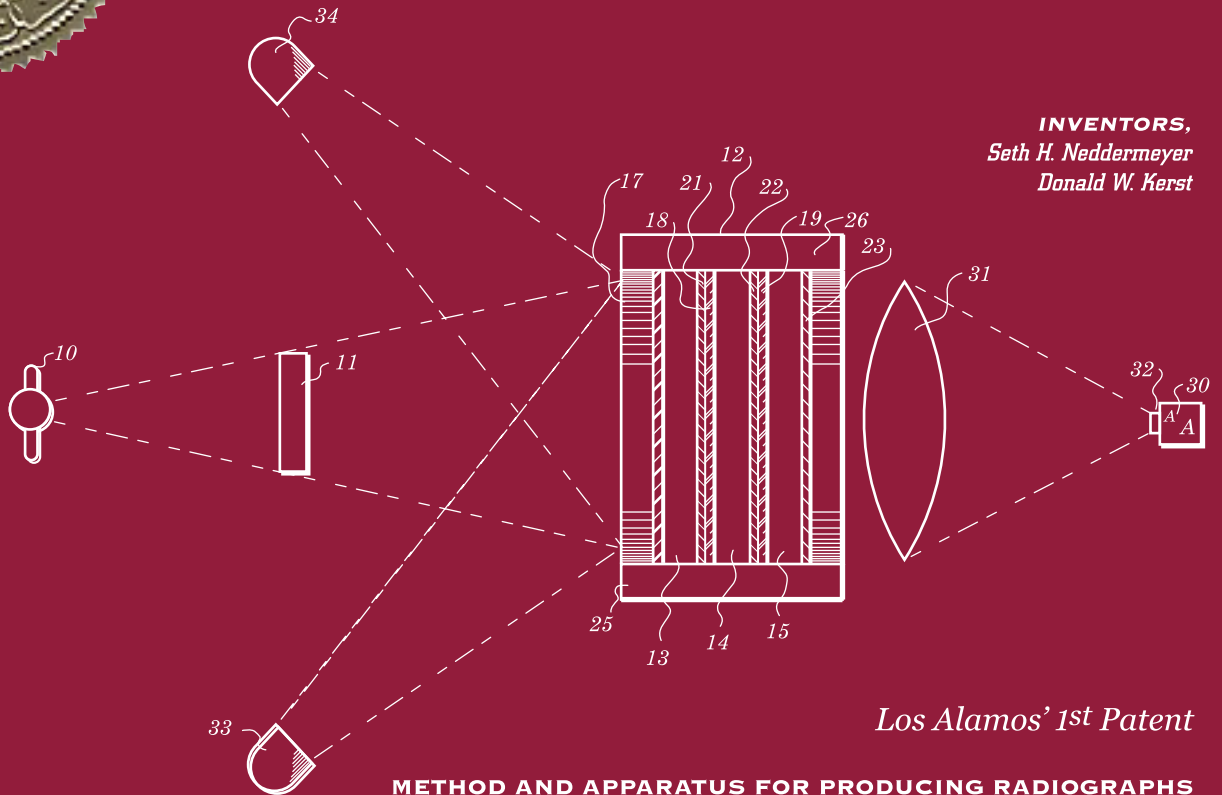




*out* **Standing**  
*inn* **Ovation**  
Applauding our innovators



**INVENTORS,**  
*Seth H. Neddermeyer*  
*Donald W. Kerst*

*Los Alamos' 1st Patent*

**METHOD AND APPARATUS FOR PRODUCING RADIOGRAPHS**

**Issued April 1947**

**THE 2000 PATENT & LICENSING AWARDS**  
*Carrying on the tradition of world-changing innovation*

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*inn* Ovation

*Applauding our innovators*

The 2000 Patent & Licensing Awards

*Carrying on the tradition of world-changing innovation*

Monday, February 5, 2001

Los Alamos National Laboratory

Los Alamos, New Mexico





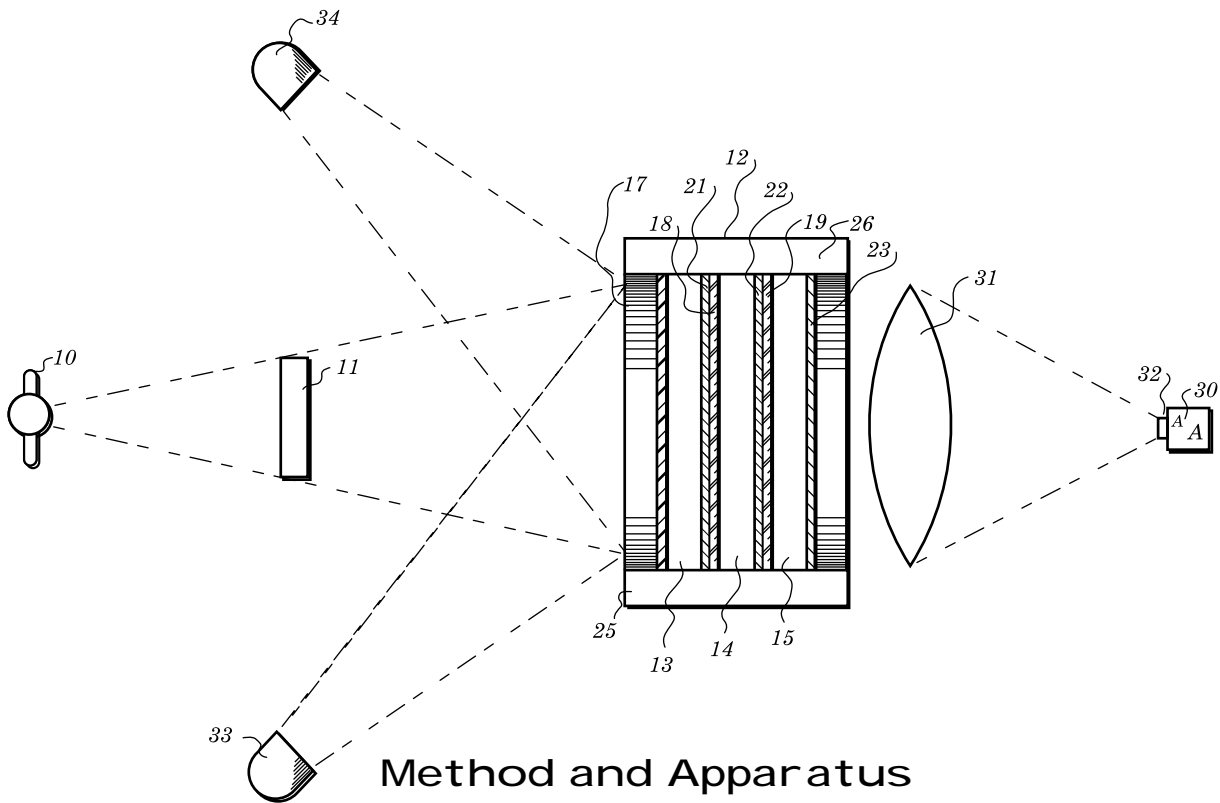
Welcome to the third Annual Patent and Licensing Awards Ceremony! This evening we celebrate the past year's achievements by our outstanding innovators and honor them for their hard work, creativity, and perseverance. Their achievements span a broad spectrum of technologies, but they all bear the hallmark of the Laboratory since its inception—exploring the unknown and achieving the incredible!

I'm proud to have this opportunity to recognize these men and women who have demonstrated their willingness to contribute to technology transfer activities at the Laboratory. Their achievements include patents issued, copyrights asserted, technologies licensed, and royalties received. We have a history at Los Alamos for developing technologies that have inherent scientific value. The creativity of our innovators and the diligence of our technology transfer professionals help us demonstrate that our work here also has economic value.

I commend these men and women for their achievements throughout the past year and encourage their continued participation in these activities. They are making outstanding contributions to the Laboratory and to society.

Congratulations!

*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 58 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 2000.

### Deposition Head for Laser

Gary K. Lewis and Richard M. Less

A deposition head for a laser deposition apparatus useful in forming articles of a desired shape and dimensions from particulate materials has been developed.

### Secure Communications with Low-Orbit Spacecraft Using Quantum Cryptography

Richard J. Hughes, William T. Butler, Paul G. Kwiat, Gabriel G. Luther, George L. Morgan, Jane E. Nordholt, Charles G. Peterson, and Charles M. Simmons

An apparatus and method have been developed for secure communication between an earth station and spacecraft using polarized photons of light to transfer random key material .

### Recovery of Strontium Activity from a Strontium-82/ Rubidium-82 Generator

Wayne A. Taylor, Dennis R. Phillips, and Kenneth M. Sosnowski

The process involves recovery of strontium-82 from spent strontium-82/rubidium-82 generators to provide a source of strontium-82 for additional strontium-82/rubidium-82 generators.

### Atmospheric- Pressure Plasma Jet

Gary S. Selwyn

A gamma-mode, resonant-cavity plasma discharge that can be operated at atmospheric pressure and near room temperature has been developed. Unlike plasma torches, the discharge produces a gas-phase effluent no hotter than 25°C at the applied power. A "jet" of long-lived metastable and reactive species that are capable of rapidly cleaning or etching metals and other materials is generated.

### Modification of Polymeric Substrates Using Dense or Liquefied Gases

Samuel P. Sawan, Walter D. Spall, and Hung Chang Lee

A method of modifying a polymeric substrate, such as polyethylene terephthalate and nylon 66, by contact of the polymeric substrate with a dense or liquified gas, such as carbon dioxide or sulfur hexafluoride, and a fluorinated compound, such as a fluorinated polyether has been developed.

## **Apparatus for Automatic Testing of Biological Specimens**

Scott P. Layne and Tony J. Beugelsdijk

An apparatus for performing automated testing of biological specimens has been developed. The apparatus includes a process controller for translating user commands into test instrument suite commands, and a test instrument suite comprising a means to treat the specimen to manifest an observable result, and a detector for measuring the observable result to generate specimen test results.

## **Modular Error Embedding**

Maxwell T. Sandford II, Theodore G. Handel, and John M. Ettinger

A method of embedding auxiliary information into the digital representation of host data containing noise in the low-order bits has been developed. The method applies to digital data representing analog signals, for example, digital images. The method reduces the error introduced by other methods that replace the low-order bits with auxiliary information and doubles the amount of auxiliary information that can be added to host data values, in comparison with bit-replacement methods for high bit-rate coding.

## **Purification of Tantalum by Plasma Arc Melting**

Paul S. Dunn and Deniece R. Korzekwa

The level of oxygen and carbon impurities in tantalum was reduced by plasma arc melting the tantalum using a flowing plasma gas generated from a gas mixture of helium and hydrogen.

## **Stable, Concentrated Solutions of High Molecular Weight Polyaniline and Articles Therefrom**

Benjamin R. Mattes and Hsing-Lin Wang

Stable, concentrated solutions of high-molecular-weight polyaniline have been developed using the addition of gel inhibitors to the polymer solution, thereby permitting high concentrations of stable high-molecular-weight emeraldine base polyaniline to be prepared. The resulting solutions are useful for generating excellent fibers, films, coatings, and other objects, since the solutions are stable for significant time periods.

## **Carbon-Based Prosthetic Devices**

David J. Devlin, David W. Carroll, John G. Cowie, and Robert S. Barbero

A composite article useful as a prosthetic device for replacement joints has been developed and includes a porous structural member of carbon fiber, carbon fill material within a portion of the pores, and a thin coating of diamond-like carbon upon the surface of the composite article.

## **Rippled Beam Free-Electron Laser Amplifier**

Bruce E. Carlsten

A free-electron laser amplifier provides a scalloped annular electron beam that interacts with the axial electric field of a  $Tm_{0n}$  mode. A solenoid arranged about a waveguide produces an axial constant magnetic field within the waveguide. An electron beam source outputs an annular electron beam that interacts with the axial magnetic field having a variable radius with a ripple period along the axial centerline. An rf source outputs an axial electric field that propagates within the waveguide coaxial with the electron beam and has a radial mode that interacts with the electron beam at an equilibrium radius component of the electron beam.

## **Method and Apparatus for Bubble Chamber Spectroscopy**

Robert K. Sander, Jerry H. Atencio, Edward I. McCreary, and Xin Luo

A bubble chamber spectrometer provides a new method for the sensitive detection of an analyte in a solvent. The spectrometer includes a chamber for receiving a solution with a solvent and an analyte; a laser adapted to direct an output laser beam through the bubble chamber, where the laser has an output wavelength selected to be absorbed by the analyte and to be transmitted by the solvent; and a video camera adapted to display passage of the laser beam through said bubble chamber so that bubbles in the solvent arising from energy deposition from the laser in the analyte can be counted to characterize the analyte both quantitatively and qualitatively.

## **Passivation of Quartz for Halogen-Containing Light Sources**

Zoran Falkenstein

The lifetime of halogen-containing light sources can be extended by passivating the quartz or glass gas containers with halogens prior to filling the quartz with the halogen and rare gas mixtures used to produce the light.

## **Fuel Cell CO Sensor**

Stephen A. Grot, Mark A. Meltser, Stanley Gutowski, Jay K. Neutzler, Rodney L. Borup, and Kirk R. Weisbrod

A carbon monoxide sensor has been developed including a proton-exchange-membrane probe; an electrical discharge circuit for discharging the proton-exchange-membrane probe to monitor carbon monoxide concentration; and an electrical purging circuit to intermittently raise the anode potential of the proton exchange membrane probe's anode to electrochemically oxidize any carbon monoxide adsorbed on the probe's anode catalyst. The carbon monoxide concentration in the hydrogen feed stream to a proton exchange membrane fuel cell stack is monitored by measuring current and/or voltage behavior patterns from a proton-exchange-membrane probe communicating with the reformate feed stream.

## **Personal Continuous Air Monitor**

Ronald G. Morgan and Samuel A. Salazar

A personal continuous air monitor capable of giving immediate warning of the presence of radioactivity has been developed. The monitor has a filter/detector head to be worn in the breathing zone of a user, containing a filter mounted adjacent to radiation detectors,

and a preamplifier. The filter/detector head is connected to a belt pack to be worn at the waist or on the back of a user.

## **Characterization of Highly Scattering Media by Measurement of Diffusely Backscattered Polarized Light**

Andreas H. Hielscher, Judith R. Mourant, and Irving J. Bigio

An apparatus and method for recording spatially dependent intensity patterns of polarized light that is diffusely backscattered from highly scattering media has been developed. These intensity patterns can be used to differentiate different turbid media, such as polystyrene-sphere and biological-cell suspensions. Measurements performed on biological cell suspensions show that intensity patterns can be used to differentiate between suspensions of cancerous and noncancerous cells.



## **Stable Operating Regime for Traveling Wave Devices**

Bruce E. Carlsten

Autophase stability is provided for a traveling wave device electron beam for amplifying an rf electromagnetic wave. An off-axis electron beam is generated at a selected energy and has an energy noise inherently arising from an electron gun. The off-axis electron beam is introduced into a waveguide at a second radius. The waveguide structure is designed to obtain a selected detuning of the electron beam. The off-axis electron beam is placed at a selected distance from the walls defining the waveguide, wherein changes of the electron beam density due to the rf electromagnetic wave are independent of the energy of the electron beam to provide a concomitant stable operating regime relative to the energy noise.

## **Polyolefin Oil/Water Separator**

Todd D. Siverling, William A. Chroninger, Kreg T. Gauss, and William S. Radzinski

An oil/water mist separator for use with exhausts from sources such as air compressors, air separators, air receivers, and air dryers has been developed using fibrous polyolefin strips placed in a hollow receptacle to separate the oil from the water

in the mist. The oil is retained on the polyolefin, while the purified water may be discharged in conventional sanitary drains.

## **Reference Palette Embedding**

Maxwell T. Sandford II and Theodore G. Handel

A method of embedding auxiliary information into the digital representation of publication quality color-component digital data has been developed. The process creates an intermediate, digital, color-component difference image that allows steganographic methods to hide or embed the auxiliary data. The process secures the auxiliary data from detection and from unauthorized removal or use by means of the digital reference palette image and a steganographic key. By a substantially reverse process, the embedded auxiliary data can be retrieved easily by an authorized user. The invention provides for a means to combine a removable, visible, digital watermark with publication quality digital image data.

## **Pulse Tube Refrigerator with Variable Phase Shift**

Gregory W. Swift and David L. Gardner

An orifice pulse tube refrigerator having a pulse tube and a reservoir with a compliance value has been developed with a variable acoustic impedance connecting the pulse tube and the reservoir. The variable acoustic impedance includes two or more variable impedances, which may be an inertance, and valves forming variable resistive members, wherein the resulting acoustic impedance has a phase angle that is variable for improved cooling efficiency. The inertance may also be variable to further provide for varying the phase angle.

## **Blue-Light-Emitting Thiogallate Phosphor Including a Thin Nucleation Layer of Strontium Sulfide**

Thomas S. Moss III and Robert C. Dye

An electroluminescent device has been developed including a glass substrate, a transparent conductor layer, a dielectric layer, a strontium sulfide nucleation layer, and a phosphor material.

## **Enhanced-Wetting, Boron-Based, Liquid Metal Ion Source and Method**

Michael J. Bozack, Lynwood W. Swanson, Anthony E. Bell, William M. Clark, Mark W. Utlaut, and Edmund K. Storms

A binary, boron-based alloy (including nickel, palladium, or platinum) is used as the source for field-emission-type, ion-beam generating devices employing graphite substrates. The boron-based alloy promotes wetting of the substrates.

## **Titanium-Tantalum Alloys**

R. Alan Patterson, Paul S. Dunn, James D. Cotton, and John F. Bingert

A process of preparing a titanium-tantalum alloy has been developed. The process includes forming a mixture of essentially pure titanium powder and essentially pure tantalum powder, melting the mixture of titanium powder and tantalum powder by plasma torch melting under a pressure greater than atmospheric pressure to form a titanium-tantalum solution, and casting the molten solution of titanium-tantalum to form a solid homogeneous titanium-tantalum product. The process can further include hot-rolling the cast solid homogeneous titanium-tantalum product to form a sheet of the titanium-tantalum product.

## **Nitrate Reduction**

Jacek J. Dziejewski and Stanislaw Marczak

A method for treatment of aqueous nitrate-containing liquids has been developed wherein nitrates are reduced to nitrogen gas by contacting the nitrates with a metal to convert the nitrates to nitrites, which are then contacted with an amide to produce carbon dioxide and nitrogen, which can be released to the atmosphere.

## **Gallium-Based Low- Interaction Anions**

Wayne A. King and Gregory J. Kubas

An organoalumoxane-free ionic polymerization catalyst composition formed from a catalyst including an active cationic portion, where the cation is a metallocene cation, and a gallium-based weakly coordinating anion, where the anion includes a bridging group between two gallium atoms, has been developed.

## **Fourier Transform Spectrometer Using a Multielement Liquid Crystal Display**

David J. Funk II and David S. Moore

A solid-state Fourier transform spectrometer has been developed using fixed dispersive optical elements and a polychromatic light

source with no moving parts. Such a Fourier transform spectrometer can provide increased signal to noise ratios over scanning dispersive instruments and substantial freedom from low frequency noise.

## **Rapid Acoustooptic Tuner and Phase- Shifter**

David C. Thompson, George E. Busch, Charlie E. Strauss, Carl W. Wilson, Thomas J. Zaugg, Dennis K. Remelius, and Tsutomu Shimada

A pair of acoustooptic devices is used in a laser or other optical resonator to produce a wavelength-dependent deflection of the light without incurring a net frequency shift. This permits rapid electronic tuning of the resonator wavelength, as well as rapid electronic variation of cavity loss, out-coupling fraction, and round-trip phase shift. The dispersive quality of acoustooptic devices in transmission is utilized as a reflection grating substitute. Two mirrors, one an output coupler, a gain medium, and two acoustooptic devices arranged for maximum efficiency such that the incident and diffracted beams are approximately at the Bragg angle for each acoustooptic device permit the laser wavelength to be determined by the acoustic frequency.

## Traveling-Wave Device with Mass Flux Suppression

Gregory W. Swift, Scott N. Backhaus, and David L. Gardner

A traveling-wave device has been developed with the conventional moving pistons eliminated. Acoustic energy circulates through a fluid within a torus. A side branch may be connected to the torus for transferring acoustic energy into or out of the torus. A regenerator is located in the torus with a first heat exchanger located on a first side of the regenerator downstream of the regenerator. A second heat exchanger is located on an upstream side of the regenerator. The improvement is a mass flux suppressor located in the torus to minimize time-averaged mass flux of the fluid and concomitant energy loss.

## Polar Self-Assembled Thin Films for Nonlinear Optical Materials

Xiaoguang Yang, Basil I. Swanson, and Dequan Li

A nonlinear optical material has been developed including a substrate, a silane coupling compound and a structurally interlocked chromophore consisting of a multiple of dipolar molecules chemically bound into cone-shaped supermolecules.

## Capacitively Coupled RF Diamond-Like-Carbon Reactor

David J. Devlin, Don M. Coates, Thomas A. Archuleta, and Robert S. Barbero

A process of coating a nonconductive fiber with diamond-like carbon, including passing a nonconductive fiber between a pair of parallel metal grids within a reaction chamber, introducing a hydrocarbon gas into the reaction chamber, forming a plasma within the reaction chamber for a sufficient period of time whereby diamond-like carbon is formed upon the nonconductive fiber, has been developed, together with a reactor chamber for deposition of diamond-like carbon upon a nonconductive fiber.

## Fuel Cell with Metal Screen Flow Field

Mahlon S. Wilson and Christine Zawodzinski

A polymer electrolyte membrane fuel cell has been developed with electrodes supplied with a reactant on each side of a catalyzed membrane assembly. The fuel cell includes 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 catalyzed membrane assembly.

## Scanning Computed Confocal Imager

John S. George

A confocal imager including a light source emitting light, with light modulating means in optical communication with the light source for varying the spatial and temporal pattern of the light has been developed. Beam splitting means receive the scanned light and direct the scanned light onto a target and pass light reflected from the target to video capturing means for receiving the reflected light and transferring a digital image of the reflected light to computer means for creating a virtual aperture and outputting the digital image.

## Anomaly Analysis Using Maximum Likelihood Continuity Mapping

John E. Hogden, James C. Scovel, and James M. White

A method of modeling symbol sequence generation is obtained which allows the probability of symbol sequences to be estimated. The model involves treating symbols as if they are emitted as a point travels through an abstract

space called a continuity map, in which each position in the space has associated probabilities of emitting each of the possible symbols. This method for modeling symbol generation, combined with methods for estimating the probability of symbol sequences given smooth paths through the continuity map, can be applied to such problems as language modeling and anomaly/fraud detection. A fraud detection study is described that demonstrates that the invention can be used for detecting medical fraud.

### **Optical Refrigerator Using Reflectivity Tuned Dielectric Mirrors**

Bradley C. Edwards, Melvin I. Buchwald, and Richard I. Epstein

An optical refrigerator has been developed that includes the use of reflectivity tuned dielectric mirrors, which allow higher-energy fluorescence photons to readily escape from the working material, while inhibiting the escape of the lower-energy photons, which are consequently partially trapped in the working material and ultimately reabsorbed and refluoresced at higher energies. This increases the optical refrigerator efficiency.

### **Formation of Nonlinear Dielectric Films for Electrically Tunable Microwave Devices**

Quanxi Jia and Alp T. Findikoglu

A thin film structure has been developed including a lanthanum aluminum oxide substrate, a thin layer of homoepitaxial lanthanum aluminum oxide, and a layer of a nonlinear dielectric material on the thin layer of homoepitaxial lanthanum aluminum oxide. Such a thin film structure is useful in microwave and electrooptical devices.

### **Single Molecule Identification Using Selected Fluorescence Characteristics**

Peter M. Goodwin, Alan K. VanOrden, James H. Jett, Richard A. Keller, and Nicholas P. Machara

Single fluorescent molecules with similar (overlapping) excitation and emission spectra are distinguished on the basis of fluorescence burst intensity and intra-burst fluorescence decay rate. Correlated measurements of both of these parameters allow single molecule identification at a reduced error rate compared to identification based on burst size or intra-burst fluorescence decay rates alone. The measurements are made using only a single excitation

laser wavelength and one fluorescence emission detection channel. The invention reduces the complexity and expense of identifying multiple types of fluorescent molecules in a sample stream.

### **Speech Processing Using Maximum Likelihood Continuity Mapping**

John E. Hogden

Speech processing that, given a probabilistic mapping between static speech sounds and pseudo-articulator positions, allows sequences of speech sounds to be mapped to smooth sequences of pseudo-articulator positions has been developed together with a method for learning a probabilistic mapping between static speech sounds and pseudo-articulator position. The method for learning said mapping between static speech sounds and pseudo-articulator position uses a set of training data composed only of speech sounds. The speech processing can be applied to various speech analysis tasks, including speech recognition, speaker recognition, speech coding, speech synthesis, and voice mimicry.

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

Dipen N. Sinha

A noninvasive method for determining the liquid level and density inside a container having arbitrary dimension and shape has been developed. By generating a flexural acoustic wave in the container shell and measuring the phase difference of the detected flexural wave from that of the originally generated wave, a small distance from the generated wave, while moving the generation and detection means through the liquid/vapor interface, this interface can be detected. Both the wave generation and wave detection may be achieved by transducers on the surface of the container. A change in the phase difference over the outer surface of the vessel signifies that a liquid/vapor interface has been crossed, while the magnitude of the phase difference can be related to fluid density immediately opposite the measurement position on the surface of the vessel.

## **Method of Monitoring CO Concentration in Hydrogen to Feed to a PEM Fuel Cell**

Stephen A. Grot, Mark A. Meltser, Stanley Gutowski, Jay K. Neutzler, Rodney L. Borup, and Kirk R. Weisbrod

A method of monitoring the carbon monoxide concentration in the hydrogen feed stream to a proton exchange membrane fuel cell stack has been developed and involves measuring current and/or voltage behavior patterns from a proton exchange membrane probe communicating with the reformat feed stream.

## **Automatic Language Identification by Stroke Geometry Analysis**

Douglas W. Muir and Timothy R. Ross

A computer implemented process identifies an unknown language used to create a document. A set of training documents is defined in a variety of known languages and formed from a variety of text styles. Black and white electronic pixel images are formed of text material forming the training documents and the document in the unknown language. A plurality of line strokes are defined from the black pixels and point features are extracted from the strokes that are effective to characterize each of the

languages. Point features from the unknown language are compared with point features from the known languages to identify one of the known languages that best represents the unknown language.

## **Data Validation**

Maxwell T. Sandford II and Theodore G. Handel

A means for determining the modifications, if any, made to a set of digital data has been developed. It allows for assuring the integrity of data without changing the appearance of the data, and for determining the location of, and measuring quantitatively, any changes made to the data.

## **Fluid Sampling Tool**

Anthony R. E. Garcia, Roger G. Johnston, and Ronald K. Martinez

A fluid-sampling tool has been developed for obtaining a fluid sample from a container. When used in combination with a rotatable drill, the fluid-sampling tool bores a hole into a container wall, withdraws a fluid sample from the container, and seals the borehole. The fluid-sampling tool provides for the collection of a fluid sample without exposing the operator or the environment to the fluid or to wall shavings from the container.

## **Solar Reduction of CO<sub>2</sub>**

Reed J. Jensen, John L. Lyman, Joe D. King, and Robert D. Guettler

The red shift of the absorption spectrum of carbon dioxide with increasing temperature along with carbon monoxide stabilization are the basis of a process for direct solar reduction of carbon dioxide to liquid fuels. The result is a process capable of using renewable solar energy to directly reduce carbon dioxide from the atmosphere or stationary sources for recycle as a liquid fuel, resulting in a net decrease in carbon dioxide in the atmosphere and decreased demand on fossil fuel. The process includes heating carbon dioxide to a temperature such that absorption of the solar spectrum occurs, exposing the heated carbon dioxide to solar radiation whereby dissociation of the carbon dioxide to carbon monoxide occurs to form a hot gas mixture, and cooling the hot gas mixture to stabilize the carbon monoxide.

## **Apparatus for Separating and Collecting Hydrogen Gas**

Robert L. Nolen, Jr. and Jay R. Carnes

A hydrogen-permeable membrane is used in combination with a trap in order to separate hydrogen gas from a gas stream containing a mixture of gases. The use of a membrane selectively permeable to hydrogen protects the trap from poisoning by other components in the gas stream by substantially preventing their reaching the trap. The combination is especially useful for tritium removal and storage, since beta-resistant permeable membranes are now available.

## **Collapsible Sheath Fluid Reservoirs for Flow Cytometers**

Graham A. Mark

A method and apparatus for reducing the volume needed for storage of sheath fluid in a flow cytometer has been developed. Clean sheath fluid is placed in a collapsible reservoir, which is placed inside a rigid container. A collapsed waste sheath fluid reservoir is also placed inside the rigid container. Sheath fluid is removed from the clean fluid container for use and pumped into the waste reservoir after use. In this manner, the volume required for sheath fluid storage in a flow cytometer is reduced.

## **Heterogeneous Waste Processing**

Laura A. Vanderberg, Nancy N. Sauer, James R. Brainard, Trudi M. Foreman, and John L. Hanners

A combination of treatment methods has been developed for treatment of heterogeneous waste, including: treatment for any organic compounds present, removal of metals from the waste, and bulk volume reduction, with at least two of the three treatment methods employed and all three treatment methods employed where suitable.

## **Apparatus and Method for Providing Pulsed Fluids**

Jerome C. Barton

An apparatus for providing pulsed fluids to processing vessels has been developed. The process includes at least one reservoir for the fluid to be pulsed, valved conduits connecting the reservoir to a pumping means, a conduit with control valves from the pumping means to one or more ballast tanks with the control valves able to sequentially or intermittently direct a flow of fluid into each of the ballast tanks, and conduits from each of the ballast tanks to a control and injection valve which injects fluid from the conduits from each of the ballast tanks into a processing vessel.

## **Iron-Carbon Compacts and Process for Making Them**

Haskell Sheinberg

A process for coating metal powders with carbon has been developed together with the resultant products made from such carbon-coated metal powders.

## **Stable, Concentrated Solutions of High Molecular Weight Polyaniline and**

## **Articles Therefrom**

Benjamin R. Mattes and Hsing-Lin Wang

A method for preparing polyaniline films has been developed, which includes preparing a solution having between 15% and 30% by weight of a base form of polyaniline by mixing a solvent for polyaniline with a secondary amine in a defined molar ratio, dissolving a chosen quantity of polyaniline in the solution, coating a substrate with the solution, and thermally annealing the coated substrate.

## **Uniform Bulk Material Processing Using Multimode Microwave Radiation**

Ravi Varma and Worth E. Vaughn

An apparatus for generating uniform heating in material contained in a cylindrical vessel has been developed.  $TE_{10}$ -mode microwave radiation is coupled into a cylindrical microwave transition such that microwave radiation having  $TE_{11}$ -,  $TE_{01}$ - and  $TM_{01}$ -cylindrical modes is excited therein. By adjusting the intensities of these modes, substantially uniform heating of materials contained in a cylindrical drum, which is coupled to the microwave transition through a rotatable choke, can be achieved.

## **Determining Orientation and Direction of DNA Sequences**

Edwin H. Goodwin and Julianne Meyne

A method for determination of chromosomal orientation and strand direction of DNA sequences has been developed. The method includes preparing a cell sample in which some cells have chromosomes in which a halogenated nucleotide analog has been incorporated into one strand of the DNA double helix, selectively removing the halogenated nucleotide

analogue-substituted strand from the double helix inducing breaks in the halogenated nucleotide analogue-substituted strand, and denaturing the halogenated nucleotide analogue-substituted strand, whereby the halogenated nucleotide analogue-substituted strand is solubilized and the unsubstituted strand is left intact, hybridizing a single-stranded probe to the unsubstituted strand, and detecting the probe.

## **Pressure Polymerization of Polyester**

Charles J. Maurer, Gordon Shaw, Vicky S. Smith, Steven J. Buelow, William Tumas, Veronica E. Contreras, and Ronald J. Martinez

A process for the preparation of a polyester polymer or polyester copolymer under superatmospheric pressure conditions with a superatmospheric dense gaseous medium in a pipe or tubular reaction under turbannular flow conditions has been developed. A polymer product having a degree of polymerization of greater than 40, more preferably at least about 70, has been achieved.

## **Method for Non-invasive Intracranial Pressure Measurement**

Dipen N. Sinha

An ultrasonic-based method for continuous, noninvasive intracranial pressure measurement and monitoring has been developed. Standing waves may be set up in the skull bone and the layers in contact with the bone. At a chosen frequency, the phase difference between an excitation signal and a received signal can be determined. This difference can be related to the intracranial pressure and changes therein.

## **Ambient Pressure Fuel Cell System**

Mahlon S. Wilson

An ambient pressure fuel cell system has been developed with a fuel cell stack formed from a plurality of fuel cells having membrane/electrode assemblies, which are hydrated with liquid water, and bipolar plates with anode and cathode sides, which distribute hydrogen fuel gas and water to a first side of each one of the membrane/electrode assemblies and air with reactant oxygen gas to a second side of each one of the membrane/electrode assem-

blies. A pump supplies liquid water to the fuel cells, while a near-ambient pressure blower blows air through the fuel cell stack in excess of reaction stoichiometric amounts to react with the hydrogen fuel gas.

## **High Temperature Superconducting Composite Conductor and Method for Manufacture of Same**

James D. Cotton, Gilbert R. N. Riley, and Terry G. Holesinger

A process for increasing the resistivity of a high temperature superconducting oxide composite sheath has been developed. The process includes heating a superconductive high temperature superconducting oxide composite, which includes a sheath containing silver, in the presence of mercury at temperatures sufficient to form a silver-mercury alloy.

## **Method for Preparing Polyaniline Fibers**

Benjamin R. Mattes and Hsing-Lin Wang

A method for preparing polyaniline fibers has been developed, which includes preparing a solution having between 15% and 30% by weight of a base form of polyaniline by mixing a solvent for the polyaniline with a secondary amine in a defined molar ratio,

dissolving a chosen quantity of polyaniline in the solution, extruding the solution to form a fiber, passing the extruded fiber through an air gap, passing the fiber through a coagulation bath, and drying the cooled and solidified fiber.

## **Gate and Emitter Array of Fiber Electron Field Emission Structure**

Steven M. Valone

A unified fibrous field emission element has been developed including a conductive fibrous central core element having an insulating material directly thereon the conductive fibrous central core element and a gate electrode directly thereon the insulating material, the conductive fibrous central core element further including emission sites situated longitudinally along the length of the conductive fibrous central core element.



## Distinguished Awards

### Distinguished Patent Award

This 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.

#### **2000 Distinguished Patent Award Winner**

Gary Selwyn of the Physics Division is the recipient of this award for his "Atmospheric-Pressure Plasma Jet" technology. The Atmospheric-Pressure Plasma Jet produces a high-flux gas stream of reactive chemical species that can clean, decontaminate, etch, or coat surfaces at atmospheric pressure and low temperature. This plasma jet technology converts a vast range of organic residues or toxins into water vapor, carbon dioxide, and other nontoxic gases in one minute or less. This technology, which represents a significant improvement over existing technologies, received an R&D 100 award in 1999 and has received national recognition. The patent is currently under negotiation for an exclusive license.

### Distinguished Copyright Award

The Distinguished Copyright Award honors the authors of disclosed copyrighted materials that are considered extraordinary creations. Nominated copyrights for this distinguished award demonstrate a breadth of commercial applications, potential to create economic value and the highest level of technical excellence. In addition, these works represent vital contributions to the Laboratory's mission and provide reciprocal benefit to the Laboratory programs from which they were developed.

Recipients of this award are true bellwethers in their field and represent the Laboratory's reputation for rapid and advanced innovation in the fields of copyrighted works and software.

#### **2000 Distinguished Copyright Award Winners**

Lloyd Young and Jim Billen of the Spallation Neutron Source Division are co-recipients of this award for development of the Phase and Radial Motion in Electron Linear Accelerators (PARMELA, Version 2.0). The PARMELA computer code simulates the performance of electron and ion accelerators and beam-transport lines. The code's beam-dynamics predictions have been experimentally confirmed in detail at Los Alamos and other laboratories around the world.

Because of the detailed physics included in the code, its use is not restricted to simulating electron beams. The code accurately models charged-particle beams of any species, and, in fact, can transport, up to three different ion or electron species simultaneously. Because PARMELA makes fewer approximations than other popular, accelerator, beam-dynamics codes, designers use it to check the results of the other codes.

The code is currently licensed to Sumitomo Heavy Industries, Inc., Physics Institute Bonn University, and the Japan Atomic Energy Research Institute. It also has numerous noncommercial licenses.

## 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.

## 2000 Distinguished Licensing Award Winner

Mahlon S. Wilson of the Materials Science and Technology Division is the recipient of this award. His work in fuel cell technology is widely recognized by industry and other researchers throughout the world. His dedication to this field of research has resulted in 18 new invention disclosures, from which 15 patent applications have been filed. The Laboratory has received 10 issued patents from these patent applications. To date, Mahlon's portfolio of work has resulted in seven commercial license agreements.

Mahlon's research and development work on hydrogen fuel cells have led to collaborative agreements with industry in support of the technology. He has been effective in educating companies about his fuel cell work, which in many cases, has laid the groundwork for attracting licensees. Mahlon has been an active participant in the licensing process. 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.

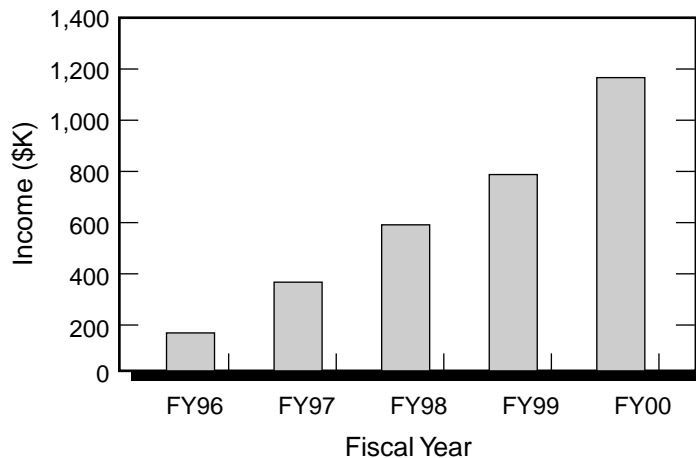
In recent years, federally funded research has become an increasingly important source of innovation needed by U.S. industry to stay competitive. Private industry recognizes that Los Alamos National Laboratory is a reservoir of extraordinary scientific talent and cutting-edge technology. For the past five 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 100 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 \$4.5 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

**Audia, Jeffrey**

*Copyright:*  
MiniGrand Family

**Bai, Ying**

*Copyright:*  
MiniGrand Family

**Barbe, Michael R.**

*Patent:*  
Laser Production of Articles  
from Powders

**Benicewicz, Brian**

*Patent:*  
Corrosion Resistant Coating

**Bigio, Irving J.**

*Patent:*  
Apparatus and Method for  
Spectroscopic Analysis of  
Scattering Media

**Billen, James H.**

*Copyright:*  
Phase and Radial Motion in  
Electron Linear Accelerators  
(PARMELA), Version 2.0

**Bolton, Richard D.**

*Patent:*  
Event Counting Alpha Detector

**Bourret, Steven**

*Copyright:*  
MiniGrand Family

**Bradley, Jonathan**

*Patent:*  
Storage and Retrieval of Large  
Digital Images

**Burczyk, Leonard G.**

*Copyright:*  
N'Tvision, Version 2.0

**Butterfield, Kenneth B.**

*Copyright:*  
NAVI-2, Version 4

**Cai, Hong**

*Patent:*  
DNA Base Mismatch Detection  
Using Flow Cytometry  
*Patent:*  
DNA Polymorphism Identity  
Determination Using Flow  
Cytometry

**Carey, James W.**

*Patent:*  
Detection of Alkali-Silica  
Reaction Swelling in Concrete  
by Staining  
*Patent:*  
Detection of Concrete  
Deterioration by Staining

**Castro, Alonso**

*Patent:*  
Optically Transparent,  
Scratch-Resistant, Diamond-  
Like Carbon Coatings  
*Patent:*  
Method for the Detection of  
Specific Nucleic Acid  
Sequences by Polymerase  
Nucleotide Incorporation

**Chen, Liaohai**

*Patent:*  
Method for Detecting  
Biological Agents

**Cole, Dean A.**

*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-Carboxphenyl) Porphine for Detecting Cancers of the Lung

*Patent:*

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

**Cole, Roger**

*Copyright:*

The Experimental Physics and Industrial Control System (EPICS), Version 3.8

*Copyright:*

Hybrid K-Edge Densitometer Software, Version 2.0

**Collins, Michael L.**

*Copyright:*

Hybrid K-Edge Densitometer Software, Version 2.0

**Cooper, Necia G.**

*Copyright:*

The Human Genome Project (Textbook)

**Cournoyer, Michael E.**

*Copyright:*

Chemical Software Input (CSWI), Version 1.0

**Crandall, Kenneth R.**

*Copyright:*

TRACE 3-D, Version 61

**Cremers, David A.**

*Patent:*

Laser Production of Articles from Powders

**Cruz, James M.**

*Copyright:*

The Human Genome Project (Textbook)

**Dalesio, Leo R.**

*Copyright:*

The Experimental Physics and Industrial Control System (EPICS), Version 3.8

**Davey, John**

*Patent:*

Catalyzed Membrane for Direct-Methanol Fuel Cells

**Davis, Anthony**

*Copyright:*

Flat-Panel Amorphous Silicon High-Resolution Computed Tomography-Data Acquisition Software (FLASHCT-DAS), Version 1.2.0

*Copyright:*

Flat-Panel Amorphous Silicon High-Resolution Computed Tomography-Data Processing Software (FLASHCT-DPS), Version 0.8.0

*Copyright:*

Flat-Panel Amorphous Silicon High-Resolution Digital Radiography (FLASHDR), Version 1.0

**Dixon, Raymond D.**

*Patent:*

Production of Elongated Articles from Particulates

**Dyson, Annmarie G.**

*Copyright:*

The Human Genome Project (Textbook)

**Eaton, Cynthia E.**

*Copyright:*

The Experimental Physics and Industrial Control System (EPICS), Version 3.8

**Ehler, Deborah**

*Patent:*

Water-Soluble Polymers for Recovery of Metals from Solids

**Faber, Vance**

*Patent:*

Digital Color Representation

*Patent:*

Population Attribute Compression

**Flower, John A.**

*Copyright:*

The Human Genome Project (Textbook)

**Fowler, Malcolm M.**

*Patent:*

Production of High Specific Activity Copper-67

**George, John S.**

*Patent:*

Scanning Computed Confocal Imager

**Gohdes, Joel**

*Patent:*

Water-Soluble Polymers and Compositions Thereof

**Gottesfeld, Shimshon**

*Patent:*

Preventing CO Poisoning in Fuel Cells

*Patent:*

Methanol Sensor Operated in  
Passive Mode

*Patent:*

Methanol Sensor Operated in  
Driven Mode

*Patent:*

Catalyzed Membrane for  
Direct-Methanol Fuel Cells

*Patent:*

Flow Channel Device for  
Electrochemical Cells

**Guthrie, George D.**

*Patent:*

Detection of Alkali-Silica  
Reaction Swelling in Concrete  
by Staining

*Patent:*

Detection of Concrete  
Deterioration by Staining

**Halbig, James K.**

*Copyright:*

MiniGrand Family

**Hamada, Micheal S.**

*Patent:*

Optimizing the Availability of a  
Buffered Industrial Process

*Patent:*

Genetic Algorithms for  
Finding Optimal Bayesian  
Experimental Designs Subject  
to Time and Cost Constraints

**Hansen, Walter J.**

*Copyright:*

MiniGrand Family

**Harker, William C.**

*Copyright:*

MiniGrand Family

**Heaton, Richard C.**

*Patent:*

Production of High Specific  
Activity Copper-67

**Hill, Jeffrey O.**

*Copyright:*

The Experimental Physics and  
Industrial Control System  
(EPICS), Version 3.8

**Hodson, Richard**

*Copyright:*

NTvision, Version 2.0

**Howat, Andrew**

*Copyright:*

SABRINA, Version 3.63

**Hsu, Hsiao-Hua**

*Patent:*

Neutron Dose Equivalent  
Meter

**Hsue, Sin-Tao**

*Copyright:*

Hybrid K-Edge Densitometer  
Software, Version 2.0

**Ianakiev, Kiril**

*Copyright:*

MiniGrand Family

**Jamriska, David J.**

*Patent:*

Production of High Specific  
Activity Copper-67

**Jason, Andrew**

*Patent:*

Seal Device for Ferromagnetic  
Containers

**Jett, James H.**

*Patent:*

Method for Rapid Base  
Sequencing in DNA and RNA

**Johnson, Jeffrey R.**

*Copyright:*

SABRINA, Version 3.63

**Johnston, Roger G.**

*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

**Keller, Richard A.**

*Patent:*

Method for Rapid Base  
Sequencing in DNA and RNA

**Kelley, Thomas S.**

*Copyright:*

PC/FRAM, Version 3.4

*Copyright:*

PC/FRAM, Version 2.3

**Kersteins, Deborah M.**

*Copyright:*

The Experimental Physics and  
Industrial Control System  
(EPICS), Version 3.8

**Klosterbuer, S. F.**

*Copyright:*

MiniGrand Family

**Kozubal, Andrew**

*Copyright:*

The Experimental Physics and Industrial Control System (EPICS), Version 3.8

**Krick, Merlyn S.**

*Copyright:*

MiniGrand Family

**Kuske, Cheryl R.**

*Patent:*

Method of Quantitating DSDNA

**Lamartine, Bruce C.**

*Patent:*

Ultrahigh, Vacuum Focused, Ion Beam Micromill and Articles Therefrom

*Patent:*

Depth Enhancement of Ion Sensitized Data

**Less, Richard M.**

*Patent:*

Multiple Feed Powder Splitter

*Patent:*

Rotary Powder Feedthrough Apparatus

*Patent:*

Deposition Head for Laser

**Lewis, Gary L.**

*Patent:*

Multiple Feed Powder Splitter

*Patent:*

Rotary Powder Feedthrough Apparatus

*Patent:*

Laser Production of Articles from Powders

*Patent:*

Deposition Head for Laser

*Patent:*

Production of Elongated Articles from Particulates

**Li, Dequan Alexander**

*Patent:*

Cyclodextrin Polymer Separation Materials

**Loree, Thomas**

*Patent:*

Apparatus and Method for Spectroscopic Analysis of Scattering Media

**Lunsford, James S.**

*Patent:*

Offset Stabilizer for Comparator Output

**Ma, Min**

*Patent:*

Cyclodextrin Polymer Separation Materials

**MacArthur, Duncan W.**

*Patent:*

Event Counting Alpha Detector

**Marrone, Babetta L.**

*Patent:*

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

**Martin, John C.**

*Patent:*

Method for Rapid Base Sequencing in DNA and RNA

**Martin, Richard**

*Patent:*

Acoustic Cryocooler

**Martz, Harry R., Jr.,**

*Patent:*

Optimizing the Availability of a Buffered Industrial Process

*Patent:*

Genetic Algorithms for Finding Optimal Bayesian Experimental Designs Subject to Time and Cost Constraints

*Patent:*

Computer Apparatuses and Processes for Analyzing a System Having False Start Events

**McBranch, Duncan W.**

*Patent:*

Method for Detecting Biological Agents

**McFarland, Andrew**

*Patent:*

Apparatus Having Reduced Background for Measuring Radiation Activity in Aerosol Particles

*Patent:*

Quick-Change Filter Cartridge

**Meyer, Ross**

*Patent:*

Magnetic Gripper Device

*Patent:*

Seal Device for Ferromagnetic Containers

**Migliori, Albert**

*Patent:*

Intrinsically Irreversible Heat Engine

**Milewski, John O.**

*Patent:*

Laser Production of Articles from Powders

*Patent:*

Production of Elongated  
Articles from Particulates

**Moody, David C.**

*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

**Moyzis, Robert**

*Patent:*

Method for Rapid Base  
Sequencing in DNA and RNA

**Mullen, Kenneth I.**

*Patent:*

Method of Quantitating  
DSDNA

**Murray, William S.**

*Copyright:*

NAVI-2, Version 4.0

**Nemec, Ronald B.**

*Patent:*

Laser Production of Articles  
from Powders

**Neutzler, Jay K.**

*Patent:*

Annular Feed Air Breathing  
Fuel Cell Stack

**Nolan, John P.**

*Patent:*

DNA Base Mismatch Detection  
Using Flow Cytometry

*Patent:*

DNA Polymorphism Identity  
Determination Using Flow  
Cytometry

**Olsher, Richard H.**

*Patent:*

Neutron Dose Equivalent  
Meter

**Ott, Martin A.**

*Patent:*

Annular Feed Air Breathing  
Fuel Cell Stack

**Parker, Robert F.**

*Copyright:*

MiniGrand Family

**Pelowitz, David G.**

*Copyright:*

MiniGrand Family

**Prueitt, Melvin L.**

*Copyright:*

The Human Genome Project  
(Textbook)

**Radebaugh, Raymond**

*Patent:*

Acoustic Cryocooler

**Ratliff, Robert**

*Patent:*

Method for Rapid Base  
Sequencing in DNA and RNA

**Reass, Pamela**

*Copyright:*

MiniGrand Family

**Reichelt, Richard A.**

*Copyright:*

The Human Genome Project  
(Textbook)

**Ren, Xiaoming**

*Patent:*

Methanol Sensor Operated in  
Passive Mode

*Patent:*

Methanol Sensor Operated in  
Driven Mode

*Patent:*

Catalyzed Membrane for  
Direct-Methanol Fuel Cells

*Patent:*

Flow Channel Device for  
Electrochemical Cells

**Robison, Thomas W.**

*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 C.**

*Patent:*

Apparatus Having Reduced  
Background for Measuring  
Radiation Activity in Aerosol  
Particles

*Patent:*

Quick-Change Filter Cartridge

**Romero, Amos M.**

*Copyright:*

MiniGrand Family



**Rusthoi, Daniel R.**

*Copyright:*

TRACE 3-D, Version 61

**Salazar, Steven D.**

*Copyright:*

MiniGrand Family

**Saltzman, Jeffrey**

*Patent:*

Digital Color Representation

*Patent:*

Population Attribute  
Compression

**Sampson, Thomas E.**

*Copyright:*

PC/FRAM, Version 3.4

*Copyright:*

PC/FRAM, Version 2.3

**Sandford, Peter A.**

*Copyright:*

The Human Genome Project  
(Textbook)

**Sauer, Nancy N.**

*Patent:*

Water-Soluble Polymers for  
Recovery of Metals from Solids

**Sharp, Gloria E.**

*Copyright:*

The Human Genome Project  
(Textbook)

**Shea, Nadine E.**

*Copyright:*

The Human Genome Project  
(Textbook)

**Sheats, Matthew**

*Copyright:*

Flat-Panel Amorphous Silicon  
High-Resolution Computed  
Tomography-Data Processing  
Software (FLASHCT-DPS),  
Version 0.8.0

**Shera, Brooks**

*Patent:*

Single Molecule Tracking

*Patent:*

Ordered Transport and  
Identification of Particles

*Patent:*

Method for Rapid Base  
Sequencing in DNA and RNA

**Simpson, Daniel**

*Patent:*

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

**Sinha, Dipen N.**

*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

**Smith, Barbara F.**

*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

**Stark, Peter C.**

*Patent:*

Method of Quantitating  
DSDNA

**Stewart, Carleton**

*Patent:*

Method for Rapid Base  
Sequencing in DNA and RNA

**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 R.**

*Copyright:*

MiniGrand Family

**Swift, Gregory W.**

*Patent:*

Intrinsically Irreversible Heat Engine

*Patent:*

Acoustic Cryocooler

**Taylor, Wayne A.**

*Patent:*

Production of High Specific Activity Copper-67

**Terwilliger, Thomas**

*Copyright:*

SOLVE, Version 1.0

**Thomas, Sharon**

*Patent:*

Catalyzed Membrane for Direct-Methanol Fuel Cells

**Unkefer, Clifford J.**

*Patent:*

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

**Valdez, Brenda R.**

*Copyright:*

The Human Genome Project (Textbook)

**Van Riper, Kenneth**

*Copyright:*

SABRINA, Version 3.63

**Wang, Hsing-Lin**

*Patent:*

Method for Detecting Biological Agents

**West, James**

*Copyright:*

SABRINA, Version 3.63

**Whaley, Thomas**

*Patent:*

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

**Wheatley, John**

*Patent:*

Intrinsically Irreversible Heat Engine

**White, James**

*Patent:*

Digital Color Representation

*Patent:*

Population Attribute Compression

**White, Paul S.**

*Patent:*

DNA Base Mismatch Detection Using Flow Cytometry

*Patent:*

DNA Polymorphism Identity Determination Using Flow Cytometry

**Whitten, David G.**

*Patent:*

Method for Detecting Biological Agents

**Wilson, Mahlon S.**

*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

**Wray, William O.**

*Patent:*

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

**Wroblewski, Debra A.**

*Patent:*

Corrosion Resistant Coating

**Yamada, Warren I.**

*Copyright:*

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

**Young, Lloyd M.**

*Copyright:*

Phase and Radial Motion in Electron Linear Accelerators (PARMELA), Version 2.0

*Copyright:*

TRACE 3-D, Version 61

**Zawodzinski, Christine**

*Patent:*

Fuel Cell with Metal Screen Flow-Field

**Zelenay, Piotr**

*Patent:*

Catalyzed Membrane 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 Program Office**

*Program Director*

Richard Mah, 667-3508

## **Industrial Partnerships Office**

*Program Manager*

Donna M. Smith, 667-9473

## **Intellectual Property Management**

*Team Leader*

Bruce Lamartine, 665-2366

## *Intellectual Property Specialists*

Christine Ramos, 665-6846

Irene Vazul, 665-7380

## *Intellectual Property Administrators*

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Annabelle Torres, 667-8129

## **Licensing**

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John Russell, 665-3941

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## **Industrial Business Development Program Office**

<http://www.lanl.gov/partnerships/>

## **Legal Counsel – Business & Patent Law Office**

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**Los Alamos**  
NATIONAL LABORATORY