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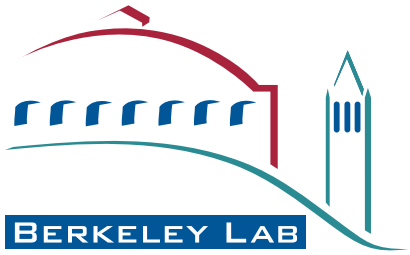

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Investigate
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possibilities…

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INVESTIGATE THE POSSIBILITIES

Tap a great national resource — partner with Ernest Orlando Lawrence Berkeley National Laboratory and take advantage of our leading-edge capabilities and expertise. We are ready to help U.S. companies compete in a tough global marketplace. Overlooking the UC Berkeley campus, Berkeley Lab is a national laboratory managed by the University of California for the U.S. Department of Energy. Berkeley Lab's research produces innovative technologies in fields applicable to many industries, including:

- ***ACCELERATOR SYSTEMS*** — Synchrotron radiation source for lithography, crystallography, bioscience and microelectronic characterization; simulation of cosmic rays for testing aerospace electronics
- ***ADVANCED MATERIALS*** — Plasma processing, ion implantation, advanced ceramics, semiconductors, superconductors, high-performance metals, polymers, and catalysts; high-powered electron microscopy, x-ray optics, electrochemistry, and alloy theory
- ***BIOTECHNOLOGY*** — Molecular and cellular biology, genetics, mutagenesis, carcinogenesis, diagnostic imaging, radiation biophysics, radiotherapy and radiosurgery, lipoprotein research, cardiovascular disease, hemopoiesis research, sequencing of human genome, x-ray crystallography for 'rational' drug design
- ***COMPUTING*** — Advanced database technology, distributed computing systems, high-speed networking, advanced computer imaging, expert systems for advanced manufacturing
- ***ENERGY*** — Fossil energy conversion, electrochemical energy storage, energy use analysis, high-efficiency insulators, computer simulations of building energy use and lighting, windows and daylighting, building energy efficiency, enhanced petroleum discovery and recovery, geothermal technology development, long-term study of photon-energy storage and photosynthetic energy systems
- ***ENVIRONMENT*** — Atmospheric effects of combustion and air quality, radon studies and abatement, high-resolution wellbore imaging, site remediation, indoor air quality
- ***MANUFACTURING*** — Advanced equipment development, micro-precision fabrication (micro electromechanical systems), laboratory and systems automation
- ***SENSORS AND CONTROLS*** — Reactive control systems, sensor development and fabrication, diagnostics and computer algorithms, custom integrated circuits and systems
- ***TRANSPORTATION*** — Batteries, advanced insulations, electrochromic windows, reflective coatings

For More Information Contact:

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Licensing Manager	Marketing Manager

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PARTNERSHIP MECHANISMS

MECHANISM	DEFINITION	BEST USED	PROTECTION OF GENERATED INFORMATION	RIGHTS IN INTELLECTUAL PROPERTY	DOE APPROVAL REQUIRED
INFORMATION EXCHANGE	The informal and free exchange of information through publications, presentations, briefings, workshops, and visits designed to inform potential industry partners about the R&D activities and capabilities of Berkeley Lab, and/or determine their needs.	When potential industry parters need to obtain initial information on Berkeley Lab activities and capabilities	N/A	N/A	N/A
TECHNICAL ASSISTANCE	Short-duration (5 working days) effort focused on timely assistance to small business partners with specific technical problems. Generally, Berkeley Lab covers salary and payroll burdens of Laboratory personnel that participate. Simple, one-page contract.	To assist small businesses that need technical assistance with unique problems. Subject to available funding from DOE.	No	No	No
PERSONNEL EXCHANGE	Exchanges of personnel between industry and Berkeley Lab for less than one year. Berkeley Lab personnel are assigned to industry facilities and/or industry assigns personnel to Berkeley Lab.	When Berkeley Lab and industrial partner have an interest in learning about each other and sharing specific skills and expertise. The level of effort and contractual obligations associated with staff exchanges are typically less than those associated with CRADAs.	No	Subject to negotiation	No
USER FACILITY AGREEMENT	Allows industry and university partners to conduct proprietary or nonproprietary research at the Laboratory's unique experimental facilities.	When partner needs are best met through use of specialized equipment or facilities designated as "National User Facilities" available at Berkeley Lab.	Proprietary data must be marked for protection	User may take title to inventions	No
COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA)	Research and development projects that are supported by resource contributions from both Berkeley Lab and industry, and have a specific technical development focus with planned outcomes. Multi-year CRADAs generally use long form CRADA contract. Shorter term/smaller scope CRADAs (that are less than $150,000) may use 5-page contract.	When Berkeley Lab, DOE, and industry have mutual interest in the development of a technology area, and cost sharing by the partners is appropriate.	Commercially valuable information generated under a CRADA may be protected for up to 5 years.	Industry-created intellectual property retained by industry. Rights to Berkeley Lab intellectual property created under a CRADA, negotiated separately.	Yes
WORK FOR OTHERS (SPONSORED RESEARCH)	Research and development projects and technical assistance efforts that are fully funded by private industry. Work must use a unique capability of the Laboratory and not place the Laboratory in direct competition with the private sector.	When industry has an immediate need for services, desires a high degree of control over the scope of services and information provided, and is willing and able to pay for the cost of services.	Proprietary data must be marked for protection	Subject to negotiation	Yes
LICENSING	Transfer of rights to patented inventions, copyrighted software, maskworks or tangible research products. May be exclusive or nonexclusive, for broad or limited field of use, to be negotiated on a case-by-case basis.	When Berkeley Lab has legal rights to a technology or software that fits an industrial partner's business strategy, and the partner wants to develop and commercialize the product/process.	N/A	Grants rights under patents, copyrights, and maskworks to use Laboratory inventions and software	Rarely required

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TECHNOLOGY TRANSFER MEANS BUSINESS

Lawrence Berkeley National Laboratory invites you to take a closer look at the many R&D approaches and opportunities available to private industry

Berkeley Lab Welcomes Your Inquiries

Berkeley Lab's unique inter-disciplinary science approach offers many technology transfer options. U. S. Department of Energy policy encourages private sector use of government-developed technologies. We welcome your inquiries to explore areas of research, technology, and collaboration.

Forging Stronger Ties

As a national laboratory, one of our missions is to make research results available to the nation's private sector for rapid commercialization. Private industrialists and entrepreneurs broaden the potential benefit and commercial value of laboratory research. They help translate new discoveries into commercially usable products and processes. Working together, the national laboratories and U.S. industry can help strengthen America's competitiveness in the world marketplace. Together, we mean business.

Making Technology Transfer Simple

We have streamlined our technology transfer operations to help industry move technologies, ideas, and services from Berkeley Lab to the marketplace.

Technology Transfer Department

Technology transfer depends on communication between those generating knowledge and those able to put it to use. The Technology Transfer Department is a focal point to foster productive relationships between scientists in research programs at Berkeley Lab, and individuals in the private sector. If you have questions regarding research areas of interest, or would like answers about the types of working relationships we form with industry, start with the Technology Transfer Department. Contact the Technology Transfer Department to:

- *Pinpoint research areas of common interest*
- *Negotiate rights to Berkeley Lab's intellectual property*
- *Discuss current patent and copyright licensing opportunities*
- *Explore sponsorships, collaborative projects and staff exchange programs*
- *Set up meetings with specific investigators*
- *Arrange site tours*

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LICENSE NEW TECHNOLOGIES

Berkeley Lab licenses a broad array of cutting-edge technologies to private industry

- **Terms** of each Berkeley Lab license vary commensurately with the market value of that technology and the common licensing practices of the relevant industrial sector.
- Licenses typically have three **monetary terms:**
  - **License issue fee,** which is nonrefundable and due upon execution of the agreement;
  - **Running royalty,** which is most commonly based on a percentage of sales, and
  - **Minimum annual royalties.**
- Licenses also contain **performance requirements** for the licensee. These are milestones that Berkeley Lab and the licensee agree reflect diligent progress in the development of the technology. These performance requirements reflect our commitment to ensure that technologies developed at Berkeley Lab are commercialized, and that the public ultimately enjoys the benefit.
- Licenses may be **exclusive or non-exclusive** for a particular field of use or geographic region.
- When an agreement grants an exclusive license for the U.S. market, the licensee must substantially **manufacture** the technology in the U.S.
- The **U.S. government** is granted a fully paid-up, nontransferable, non-exclusive license to use the invention for government purposes only, as is the case with other federally funded inventions.

Berkeley Lab's Technology Transfer Department looks forward to working with industry to develop commercially reasonable and fair license terms and conditions. Qualified, small, women-owned, minority-owned, and disadvantaged businesses are especially encouraged to inquire.

For further information regarding a specific technology, contact

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SAMPLE BERKELEY LAB TECHNOLOGIES

Batteries

Batteries with orthorhombic sodium manganese oxide cathode
Electrochemical Nanolithography
Ion implantation to extend battery life
Overcharge protection for rechargeable lithium batteries
Solid state sodium cobalt bronze batteries
Zinc-air battery
Zinc-nickel oxide battery

Biotechnology and Medicine

Aligned crystal growth at polymerized membranes
Amorphous silicon array for medical imaging
Anthrax detection kit
Biomarker for cell senescence
Breast cancer therapy for unresponsive metastatic tumors
Cancer treatment: neutron source for BNCT
Capcall: superior basecalling software package
Direct quantum detection digital x-ray imaging
Electron crystallography of membrane proteins
Engineering cell surfaces and cellular products
Erythropoietin (EPO) binding protein
Factors that neutralize radiation damage caused by TGF-β
Fluorescent biosensor
Genes encoding telomere-associated proteins
Heat shock proteins
Integrated framework for analysis of molecular profile data
Intracellular sodium detection using multiple quantum NMR
Microdissection of DNA molecules for genomic studies
Negative ion beam injection apparatus
Neural network algorithm for predicting protein structures
Physical mapping of DNA yields high resolution image
PINTA: automated MRI visualization software
Polymerized nanoparticle therapeutics
PrepTrack: assembly line automation of microtiter plate
Prototype therapeutic agent for pathogenic *E. coli*
Restoration of normal function in cancer cells
Rf-driven plasma source for ion implantation
Scanning tip microwave near field microscope
Semiconducting thin film for microstrip gas radiation detectors
Substituted 6-nitroquipazines
Tendon repair factor
Thermal cycler for rapid processing of polymerase chain reaction assays
Transgenic mice: atherosclerosis portfolio
Transgenic mice model breast cancer and leukemia
Transgenic mice model learning disorder in Down syndrome
Transgenic mice model male infertility
Tritium-labeled, high specific activity compounds

Chemical & Manufacturing Processes

Carbon nanotubes with heterojunctions for nanoscale electronics
Carboxylic acids recovery
Catalytically treated graphite
Compound refractive X-ray lens

Chemical & Manufacturing Processes *(cont'd)*

Electrochemical nanolithography
Coplanar electrode configuration for radiation detectors
Direct quantum detection digital X-ray imaging
Fluorination of unstable nickel fluorides using NiF_6^{2-} salts
High quantum efficiency charge coupled device
High resolution EUV monochromater/spectrometer
Mini pulsed metal plasma gun
Nanomachining of high aspect ratio structures
Optical metrology: superior x-ray mirrors
Phase shifting interferometer
PhoSNOX: yellow phosphorous for flue gas scrubbing
Pigments for coatings that reflect infrared radiation from fire
Pozone
Rf-driven metallic ion beam source
Rf-driven plasma source for ion beam implantation applications
Sapphire and nitride semiconductor device manufacturing
Selective ion source for semiconductor devices
Selective photochemical oxidation of hydrocarbons
Superconducting multilayer interconnect technology
Widely tunable semiconductor THz (infrared) laser

Energy Efficient Technologies

Aerogels
Aerogels: reduction of inorganic oxides with reactive plasma
Combination table lap/torchiere
Electromagnetic field imaging — high resolution, low frequency
Energy efficient laboratory fume hood
Energy efficient lighting
Gas filled insulating panels
High efficiency coupling for fiber optic and solid light guides
Pozone
Selective photochemical oxidation of hydrocarbons
Solid oxide fuel cell technologies

Environmental Technologies

Adsorbing media for carbon mass balance in airborne particles
Aerogels
Coplanar electrode configuration for radiation detectors
Direct-measure water flux meter and omni-depth tensiomenter
Disposable diffusion denuder
Electrical resistivity monitoring borehole array
Electromagnetic field imaging — high resolution, low frequency
Energy efficient laboratory fume hood
Exhaust hood airvest
Ferrofluids for subsurface flow control and imaging
Gas filled insulating panels
In situ optical sensor for particulate inorganic carbon in seawater
In vitro model for bioavailability of chemicals in humans
Lean flame stabilization ring converts natural gas burners
Low NO_x swirl burner
Organic pollutant sampler

SAMPLE BERKELEY LAB TECHNOLOGIES

Environmental Technologies *(cont'd)*

PhoSNOX: yellow phosphorous for flue gas scrubbing
Photoluminescent aerogel oxygen sensor
Recyclable sorbent coating for organic pollutant sampler
Selective photochemical oxidation of hydrocarbons
Subsurface barriers to contain hazardous wastes
Wellbore procedure characterizes groundwater contamination

Ion Sources

Cancer treatment: neutron source for BNCT
Cathodic arc plasma system with twist filter
Compact high flux rf-neutron source
Compact rf-matching network for ion beam applications
Constricted plasma source
Focused ion beam source
Intense multiply charged ion source
Ion implantation to extend battery life
Low energy spread ion source
Mini pulsed metal plasma gun
Molecular ion source
Negative ion beam injection apparatus
Porcelain-coated rf antenna
Quartz antenna with hollow conductor
Quartz antenna for rf sources
Rf-driven metallic ion beam source
Rf-driven plasma source for ion implantation applications
Selective ion source for semiconductor devices

Materials Sciences

Aerogels
Aerogels: reduction of inorganic oxides using reactive plasma
Aerosol remote duct sealing system
Aligned crystal growth at polymerized membranes
Amorphous silicon array for medical imaging
Carbon nanotechnology:
- Boron and nitrogen doped carbon nanotubes as insulators
- C_{36} fullerenes for designing new materials
- Carbon nanotubes with heterojuctions for nanoscale electronics
- Carbon nanotube field emission devices
- Carbon nanotube computer
- Engineering of nanotube geometry
- Metallic carbon materials
- Nanotube bearing and spring
- Nanotube chemical gas sensor
- Nanotubes — simple method for continuous production

Coplanar electrode configuration for radiation detectors
Corrosion-resistant titanium for highly oxidizing environments
GaN in blue-light semiconductor lasers and LEDs
Giant magnetoresistant (GMR) materials

Materials Sciences *(cont'd)*

Multimetal oxide thin films
Phase shifting interferometer
Photoluminescent aerogel oxygen sensor
Pigments for coatings that reflect infrared radiation from fire
Polymerized nanoparticle therapeutics
Precision optical slit
Sapphire and nitride semiconductor device manufacturing
Scanning polarization microscope
Scanning tip microwave near field microscope
Selective ion source for semiconductor devices
Semiconducting thin film for microstrip gas radiation detectors
Subsurface barriers to contain hazardous waste
Superconducting films on metal substrates carry commercial level current
Tamper-proof "smart adhesives" cannot be duplicated
Ultrafast scanning probe microscopy

Sensors

Amorphous silicon array for medical imaging
Coplanar electrode configuration for radiation detectors
Direct measure water flux meter and omnidepth tensiomenter
Direct quantum detection digital x-ray imaging
Electrical resistivity monitoring borehole array
EUV monochromator/spectrometer with high resolution
Fiber optic paper sensor
In situ optical sensor for particulate inorganic carbon in seawater
Mass spectrometer for high MW ions and charged particles
Moisture-resistant columnar cesium iodide for digital radiography
Novel electrochromic device controlled by sunlight
Phase shifting interferometer
Photoluminescent aerogel oxygen sensor
Physical mapping of DNA yields high resolution image
PINTA: automated MRI visualization software
Preamplifier printed circuit layout for the GRETA detector
Recyclable sorbent coating for organic pollutant sampler
Safe automated laser alignment device (SALAD)
Scanning tip microwave near field microscope
Semiconducting thin film for microstrip gas radiation detectors
Solid state optical switching device
SQUIDS:
- High Tc SQUID circuits suppress intrinsic magnetic field noise
- SQUID based planar gradiometer supresses ambient field noise
- Superconducting multilayer interconnect technology

Substituted 6-nitroquipazines
Thin film for stabilizing the microstrip gas radiation detector
Wellbore procedure characterizes groundwater contamination

October 17,2000

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31 October, 2000

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INQUIRY FORM

Date of Inquiry ____/____/____

Name _____

Position _____

Company _____

_____

Address _____

_____

Phone # _____ *FAX #* _____

Email _____

Technology(s) of interest
(Please be specific; include names of investigators if possible)

- _____
- _____
- _____
- _____

What does your company do?

- _____
- _____
- _____

Small Business? Y N *Woman-owned? Y N* *Minority-owned? Y N*
Referred by _____

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Date of Action ____/____/___ *Inquiry Handled by* _____

Action to be taken _____

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General remarks _____

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