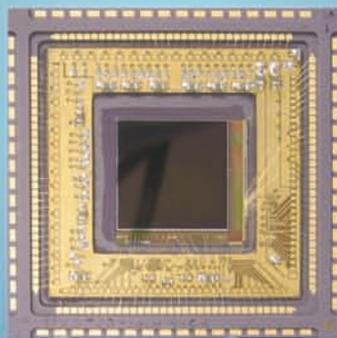


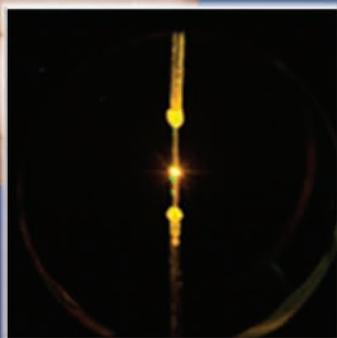
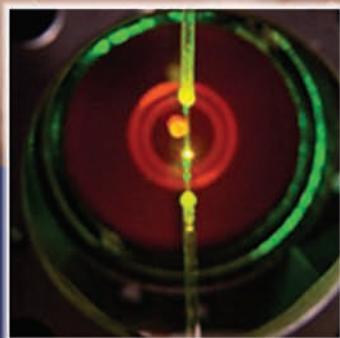
# R&D 100 2008 Call for Submissions

*Widely recognized in industry, government, and academia as a mark of excellence for the most innovative ideas of the year, the R&D 100 Awards are the only industry-wide competition rewarding the practical applications of science.*



## **Camera on a Chip** (with Teledyne Imaging Sensors)

*Giving scientists a single submicrosecond imaging tool*



## **Portable Acoustic Cytometer**

*Focusing cells for analysis using acoustic waves instead of costly fluidics*



Los Alamos National Laboratory

## 2008 Call for Submissions



*I am impressed with and proud of the ingenuity of our R&D 100 award winners. The awards demonstrate the Laboratory's powerful role in developing innovative concepts and translating them into practical solutions.*

—Michael R. Anastasio, Laboratory Director

*The R&D100 awards are among the most visible awards received by Laboratory scientists for external audiences. This is one of the ways we show the world the breadth of our technology impact. With a new submission process this year, we hope to be able to submit a larger number of nominations. Please participate in this year's process!*

—Duncan McBranch, Technology Transfer Division Leader

### **What is the R&D 100 competition?**

Since 1963, *R&D Magazine* has conducted an annual competition to select the 100 most innovative products, materials, processes, software, and systems of the previous year for its prestigious R&D 100 Awards. Winning innovations are selected on the basis of their technical importance and usefulness. Judges for the competition include a panel of 50 outside technical experts and the editors of *R&D Magazine*.

An international competition, the R&D 100 Award is regarded as a benchmark for excellence by both industry and government. The Laboratory's winning record over the last 29 years is impressive, with 105 winning technologies since we entered the competition in 1978. To honor all of the dedicated professionals who work on the Laboratory's submission packages, the director annually hosts a recognition reception in the spring at the Bradbury Science Museum. Winning teams attend *R&D Magazine's* Awards Ceremony held annually in October at Chicago's Navy Pier Conference Center.

### **Why should I enter my technology?**

Entering the competition is an excellent way to increase Laboratory staff, program, and external recognition for a technology and an inventor. DOE has publicly commended the R&D 100 winners from its laboratories for their innovative research. Winners are eligible to receive up to \$25K in funding from the Technology Transfer (TT) Division to help market technologies with demonstrated commercial potential.

### **How do I determine if my technology is eligible?**

Any new product, process, material, software, or system that has shown demonstrable technological significance compared with competing products during the 2007 calendar year is eligible for the 2008 competition. Previously submitted technologies that can claim a significant advance or partnership development in 2007 may qualify for resubmission. Proof-of-concept models are viewed skeptically by the judges and should not be entered until they are developed to a more advanced stage.

### **Participation Schedule:**

- **Kickoff Meetings**  
September 25, 2007  
9:00 a.m.  
TT Pecos Room
- **September 26, 2007**  
3:00 p.m.  
TT Pecos Room
- **Comparison matrix accepted until**  
October 19, 2007
- **R&D review committee one-on-one meetings**  
November 2007
- **Entry development**  
December–February
- **Entry submittal to R&D Magazine**  
March 3, 2008
- **Director-hosted Recognition Reception for all submitting teams, Bradbury Science Museum**  
May 2008
- **Announcement of Winners**  
July 1, 2008
- **R&D Magazine Awards Ceremony**  
Chicago  
October 2008

### Who can help me with the submission?

TT Division coordinates the Laboratory's participation in the competition. *R&D Magazine* and its readers are especially interested in the market or societal impact of the innovative technologies submitted. TT can help potential participants determine a fair market value as well as the intellectual property status of a proposed technology.

Editors and designers on the Communication Arts & Services (IRM-CAS) R&D 100 production team work with entrants to build compelling arguments for the importance and usefulness of their innovations after initial draft submissions have been approved by a technical panel. All Los Alamos entries have a common format, coordinated by the Laboratory's R&D 100 production team, which prepares entries to reach Chicago by the March 2008 deadline.

For information about entry development, contact TT Coordinator Kim Sherwood, 665-1305, [ksherwood@lanl.gov](mailto:ksherwood@lanl.gov).

### How does the Laboratory benefit?

Participation in the R&D 100 competition is a perfect opportunity for us to showcase the Laboratory's contributions to U.S. industrial competitiveness. R&D 100 Award winners enhance the Laboratory's image as a leader in technological innovation and help create new opportunities to build our intellectual property portfolios. These portfolios enable us to share our resources with society and create new opportunities to transfer our knowledge through licenses and spinoff technologies and to enhance our research base. All participants have an opportunity to work with TT staff to advance commercial development of their technologies.

Since 1995, winning innovations have returned more than \$45 million in funding to Los Alamos in the form of cooperative research and development agreements (CRADAs), Work for Others, User Facility Agreements and licenses. More than 80 patent awards have been associated with R&D 100 winners and many more patents are pending. Twenty-five percent of the Laboratory's commercial licenses and 35 percent of noncommercial licenses can be attributed to R&D 100 winners.

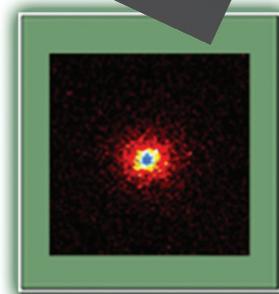
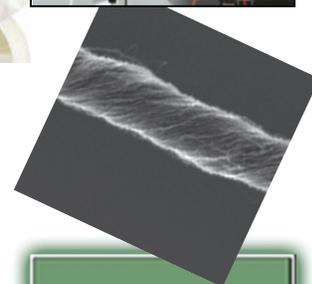
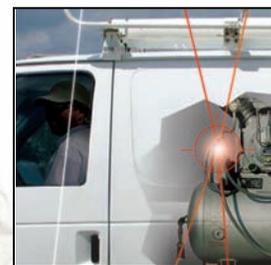
### How do I enter?

Potential participants should follow these steps:

1. Attend one of the two kickoff meetings that will be held in September (see sidebar opposite page). These one-hour meetings will cover the nature of the award, this year's **new process**, schedule, and entry requirements.
2. Potential participants must complete the technology comparison matrix available at [www.lanl.gov/rd100/compmatrix.doc](http://www.lanl.gov/rd100/compmatrix.doc). TT can provide assistance with developing the matrix. Please also review the competition criteria at [www.rdmag.com/Rd100win.aspx#whatwelookfor](http://www.rdmag.com/Rd100win.aspx#whatwelookfor). Fax (5-1325), mail (C333), or email your matrix to Kim Sherwood, [ksherwood@lanl.gov](mailto:ksherwood@lanl.gov), by COB October 19, 2007. The completed comparison matrix will be reviewed by the R&D 100 committee for completeness, appropriateness of technology for the competition, and how the technology compares with existing technologies in the field.
3. If the technology fits competition requirements, a follow-up one-on-one meeting will be arranged to provide guidance to the submitter for preparing a first draft submission in accordance with the judging criteria.
4. The first draft, written by the PI, will be reviewed by the PI's AD office and a technical reviewer prior to working with the CAS R&D 100 production team.
5. The CAS R&D 100 production team will provide editorial and design assistance for preparing the final submission during January and February 2008.

Contact Kim Sherwood at 665-1305, or [ksherwood@lanl.gov](mailto:ksherwood@lanl.gov) with general questions about the competition.

### Graphics from 2007 submissions



#### Contact information:

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**TT R&D 100 Awards**  
**Program Manager**  
**Kim Sherwood**  
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# Los Alamos National Laboratory R&D 100 Award Winners

# 1978–2007

- 1978 • Diamond Machining of Optics
  - Electronic Identification System
  - Electronic Device for Treating Tumors—Hyper Thermic Cancer Treatment
- 1980 • Wee Pocket Radiation Detector
  - Portable Multichannel Analyzer
- 1981 • Radio Frequency Quadrupole Linac
- 1982 • WC Field Computer System
- 1983 • Transuranic Waste Assay System
- 1984 • Superconducting Magnetic Energy System
- 1985 • BHTP—A Unique Scintillation Compound
- 1986 • Aurora Laser Beam Alignment System
- 1988 • Optical Microrobot Single-Cell Manipulator/Analysis System
  - Nuclear Material Solution Assay System
  - 32-Stepper Motor Position Controller
  - Mobile Beryllium Monitor
  - HTMS Reference Electrode
  - Oriented, Highly Anisotropic Conducting Polymer
  - Photoinjector for RF Linac Accelerators
  - Lattice Gas Algorithm
- 1989 • Fourier Transform Flow Cytometer
  - Noncontact Superconductor Screening
  - Conductive Lattices
- 1990 • Coolahoop
  - Universal Process for Fingerprint Detection
  - Fast Agarose Gel Electrophoresis
  - Solid-State NO<sub>2</sub> Sensor
  - Upconversion Solid-State Laser
  - A Broadband (ABB) Mw Absorption Spectrometer for Liquid Media
  - Mds<sub>2</sub>/SC Composites
- 1991 • Semi-Insulator Detector
  - Optical High-Acidity Detector
  - Resonant Ultrasonic Inspection
  - Single Molecule Detector
- 1992 • Thermal Neutron Multiplicity Counter
  - Plastic Laser Dye Rods
  - Cryogenic Diamond Turning
  - Portable Laser Spark Surface Mass Analyzer
  - Zeeman Refractive Index Detector
  - Animated Display of Inferred Tongue, Lip, and Jaw Movements During Speech
- 1993 • Selenium-Based Reagents for the Evaluation of Chiral Molecules
  - Phase-Sensitive Flow Cytometry
  - Ultrafast Infrared Spectrometer
  - Mini Elastic Backscatter Lidar
- 1994 • Ultrasensitive Ultrasonic Transducer
  - Telemetric Heat Stress Monitor
  - Optical Biopsy System
  - Lattice Boltzmann Permeameter
  - Directed Light Fabrication of Complex Metal Parts
  - Bartas Iris Identification
- 1995 • The Indigo-830
  - ARS Chemical Fill Detector
  - Hydride-Dehydride Recycle Process
  - HIPPI-SONET Gateway
  - Microsensor for VOCs
  - Polymer Filtration System
- 1996 • TRACER (Transportable Remote Analyzer for Characterization & Environmental Remediation)
  - PLASMAX (Plasma Mechanical Cleaner for Silicon Wafers)
- 1997 • Falcon: Breakthrough Software for Simulating Oil Reservoirs
  - Rapid Size Analysis of Individual DNA Fragments
  - ASR Detect—Diagnostic Method for Analyzing Degrading Concrete
  - Dry Wash
  - Plasma Source Ion Implantation for Enhancing Materials Surfaces
  - High Performance Storage
- 1998 • Cyrax™—Portable, 3-D Laser-Mapping and Imaging System
  - Low-Smoke Pyrotechnics
  - SOLVE—Creating 3-D Pictures of Protein Molecules from X-Ray Diffraction Spots
  - Underground Radio
- 1999 • Acoustic Stirling Heat Engine
  - Atmospheric Pressure Plasma Jet
  - CHEMIN: A Miniaturized X-Ray Diffraction and X-Ray Fluorescence Instrument
  - PREDICT—A New Approach to Process Development
  - Real-Time, Puncture-Detecting, Self-Healing Materials
  - REED-MD: A Computer Code for Predicting Dopant Density Profiles in Semiconductor Materials
  - The Sulfur Resistant Oxymitter 4000™
- 2000 • ANDE: Advanced Nondestructive Evaluation System
  - Electroexploded Metal Nanoparticles
- 2001 • Free-Space Quantum Cryptography
  - SCORR—Supercritical CO<sub>2</sub> Resist Remove
  - Tandem-Configured Solid-State Optical Limiter
- 2002 • GENIE: Evolving Feature-Extraction Algorithms for Image Analysis
  - HDF5 – Hierarchical Data Format
- 2003 • CARISS: Integrated Elemental and Compositional Analysis
  - BASIS: High-Confidence Biothreat Detection and Characterization
  - FIRETEC: A Physics-Based Wildfire Model
  - Flexible Superconducting Tape
  - FlashCT™
  - Green Destiny
  - PowerFactoRE: A Suite of Reliability Engineering Tools for Optimizing the Manufacturing Process
  - Super-Thermite Electric Matches
- 2004 • Clustermatic: A Complete Cluster Management Software Solution
  - Confocal X-Ray Fluorescence Microscope
  - mpiBLAST: A High-Speed Software Catalyst for Genetic Research
  - Plasma-Torch Production of Spherical Boron Nitride Particles
  - 10-Gigabit Ethernet Adapter: Speed Really Changes Everything
- 2005 • CartaBlanca: A High-Efficiency, Object-Oriented, General-Purpose Computer Simulation Environment
  - MESA: Measuring Enzyme-Substrate Affinities
  - nanoFOAM: A Metal-Nanofoam Fabrication Technique
  - NESSUS-V8: A Probabilistic Engineering Analysis Software
- 2007 • ENABLE: Energetic Neutral Atom Beam Lithography/Epitaxy
  - Green Primaries: Enviro-Friendly Energetic Materials
  - MICHELLE: A Software Tool for Three-Dimensional Modeling of Charged-Particle-Beam Devices
  - PixelVizion: An NPU-Embedded Visualization Accelerator for Large Data Sets
  - Trident
- 2007 • Camera on a Chip
  - Portable Acoustic Cytometer