Gibbons Confirmed as New Science Advisor

John H. Gibbons was confirmed in late January as Director of the White House Office of Science and Technology Policy (OSTP) and the Assistant to the President for Science and Technology. He brings to these positions fourteeen years of experience as the Director of the Office of Technology Assessment (OTA) and the broad perspective gained from that position. OTA is a bipartisan research arm of the U.S. Congress, which provides Congress with independent, expert, and comprehensive analysis on science and technology issues that affect society.

Gibbons has worked successfully with Congress and has an established rapport with Vice President Al Gore, who is expected to take over much of the Clinton Administration's policymaking in science and technology. In his statement before the Senate Committee on Commerce, Science, and Transportation, Gibbons cited his interdisciplinary work at Oak Ridge National Laboratory and the University of Tennessee, in addition to his experience at OTA.

Gibbons shows a knack for listening to differing views and perspectives, reconciling them, and integrating them into a practical plan for action. Such talents, he said, are necessary "to forge policies and decisions across the executive agencies, particularly for Administration initiatives that require coordinated participation by several departments."

As director of OSTP, Gibbons will be the chair of FCCSET, the Federal Coordinating Council for Science, Engineering and Technology. Gibbons hopes to "build on the impressive progress" made by his predecessor, D. Allan Bromley. Under Bromley's direction, FCCSET coordinated such multiagency initiatives as the Advanced Materials and Processing Program (AMPP), plus initiatives in computing, biotechnology, math and science education, and global change. (See the March 1992 *MRS Bulletin*, p. 18).

Gibbons is also part of the core group for the newly established National Economic Council (constituted along the lines of the National Security Council). Science and technology are expected to be key components of economic growth.

Another requirement of the job, Gibbons said, is to appreciate bringing technology to market, stressing the importance of "building new, productive bridges of cooperation and co-venturing."

Gibbons is a native of Harrisonburg, VA. He received his BS degree in math and chemistry from Randolph-Macon College and his PhD degree in physics from Duke University.

From 1954–69, Gibbons was a group leader in nuclear geophysics at Oak Ridge National Laboratory (ORNL), where he directed experimental studies of nuclear reactions and of the origins of the solar system's heavy elements. He also took sabbaticals to do work on civil defense and ballistic missile defense, and national lab/university relations. He became Environmental Program Director at ORNL in 1969

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and held that post until 1973. Then he spent a year as director of the Federal Energy Administration's Office of Energy Conservation. From 1974–79 he was director of the Energy, Environment, and Resources Center and professor of physics at the University of Tennessee. He then accepted the directorship of OTA.

Gibbons received the 1991 APS Leo Szilard Award for Physics in the Public Interest and the 1992 AAAS Abelson Prize for exceptional contributions to advancing science. He is a fellow of APS and AAAS. In 1974 he received the first Distinguished Service Award from the Federal Energy Administration.

Commerce Department Announces 21 Advanced Technology Awards

The Department of Commerce has announced 21 new grant awards for its Advanced Technology Program. This program promotes innovative research and development for commercially important technologies.

The new awards will help finance multiyear research and development projects with a projected total cost of more than $94 million. Approximately $48 million will be funded by the technology program.

Managed by the Technology Administration's National Institute of Standards and Technology, the Advanced Technology Program provides partial funding to develop cutting-edge technologies where high risks are matched with a potential for commercially important advances.

More than 30 companies, universities, and research institutions will participate directly in research projects supported by these awards. The 21 awards include three joint ventures. Two-thirds of the awards are for projects led by small businesses. Projects cover a broad spectrum of technology, including machine tools, biotechnology, electronics, optics, materials engineering, lighting technology, and refrigeration. All awards are subject to successful completion of negotiations and the signing of research agreements between the Commerce Department and the applicants.

Projects are funded only in response to announced solicitations. Grants are awarded on the basis of a competitive review based on the scientific and technical merit of the proposal and its potential benefits to U.S. industry.

Following is a complete list of the 21 winning proposals and award amounts.

Ejector Expansion Refrigeration Cycle (EERC), awarded to Calmac Manufacturing Corp. The project will harness energy normally lost in the expansion phase of a vapor compression refrigerator to help compress the gas entering the compressor, for an estimated 10 to 20 percent improvement in efficiency. ATP will fund $729,000 of the $1.1 million project.

Thick-Film Superconducting Materials for Radiofrequency Communications, awarded to Illinois Superconductor Corp. to develop thick-film processing technology for radiofrequency components for communications equipment (such as cellular telephone base stations) based on high-temperature superconductors. ATP will fund $1.9 million for the project, which is budgeted at $3.5 million.

Dry Gas-Phase Cleaning Technology for Single-Wafer Surface Conditioning, awarded to FSI International, Inc. to develop technology to "clean" semiconductor wafers of trace metals, particles, and surface damage, using dry, gas-phase agents in lieu of wet chemicals. ATP will award $2 million for this $5.4 million program.

Octahedral Hexapod Machine Development Program, awarded to The Ingersoll Milling Machine Company. This project will demonstrate a revolutionary new design for high-precision, multi-axis machine tools based on an octahedron frame and a "Stewart platform" actuator. ATP will award $1.8 million to the $3.5 million project.

Development of an Adaptive Compensation Technique for Enhancing CMM Accuracy, awarded to Giddings & Lewis—Measurement Systems. This company will incorporate an innovative laser optical system for monitoring minute dimensional changes into an adaptive control system for coordinate measuring machines, to permit their use on the factory floor. ATP will fund $994,000 for this $1.5 million project.

Engineering Design with Injection-Molded Thermoplastics, awarded to General Motors. The aim of this project is to develop a scientific understanding of the relationship between processing, part geometry, microstructure, and part performance for fiber-reinforced molded thermoplastic parts, and embody this knowledge in an integrated thermoplastic engineering design methodology. ATP will fund $5.7 million of this $11.8 million project.

Genosensor Technology Development, awarded to The Genosensor Consortium. The consortium plans to develop a microfabricated chip incorporating synthetic DNA probes, together with necessary sen-

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sor and computer technology, for an automated, low-cost DNA sequencer. ATP will fund $9.2 million of the project's $18.4 million budget.

Mathematical Algorithms and Software for the Restoration and Reformatting of Moving Pictures, awarded to Mathematical Technologies, Inc. This project will build on recent theoretical developments in mathematical image analysis to create a generic software technology to restore, enhance, or digitally reformat moving pictures, such as sequences from infrared, ultrasonic, or x-ray sensors, or motion-picture film. ATP will award $997,000 to this project's $1.1 million budget.

Wavelength Division Multiplexing for Optical Telecommunications Systems, awarded to Accuwave Corp. This project uses principles of volume holography in photorefractive crystals to multiplex hundreds of wavelength channels for advanced telecommunications systems. ATP will fund $1.9 million of the $2.8 million project.

Novel Cost-Effective Process to Fabricate Surface Feature Microoptics in Pure Silica, awarded to Geltech, Inc. This award is for developing the sol-gel process to produce high-quality silica-glass microoptics at low temperatures. ATP will give $1.3 million to the project's $2.7 million budget.

Low Dielectric Foams for Microelectronics Applications, awarded to IBM Corp. This project will develop a new class of high-performance dielectric insulators based on polymer foams to support much faster, more densely populated microcircuits. ATP will fund $1.8 million of this $5.7 million project.

Development of Blue/Green Emitters Utilizing Homoepitaxial ZnSe-Based Heterostructures, awarded to Eagle-Picher Research Laboratory. The laboratory will apply newly developed production technologies to the fabrication of high-efficiency, long-lived blue/green lasers and LEDs. ATP's award is $1.7 million of the project's $2.9 million budget.

New Technology for High-Current, Parallel, Broad-Beam Implanters for Microelectronics Fabrication, awarded to Diamond Semiconductor Group, Inc.. This project aims to develop a new architecture for semiconductor ion implantation machines for high-current implantation over a broad area. ATP will award $1.3 million to this $1.7 million project.

Thick Ductile Metallic Glass for Electric Power Applications, awarded to Allied Signal, Inc. The company will develop new rapid-solidification casting technology to produce thick ribbons of metallic glass sufficiently ductile to be used in high-power electric transformers and motors to reduce wasteful power loss. ATP will fund $2 million toward the total budget of $4.2 million.

Electron-Trapping Optical Memory for Digital Recording Applications, awarded to Optex Corp. This project will demonstrate the use of quantum-level "electron trapping optical memory" in a prototype erasable optical disk drive suitable for digital video recording at substantially higher

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speeds and greater densities than existing optical storage media. ATP's award will be $1.4 million of the $2.5 million budget.

Electrochromic Materials, awarded to 3M, SAGE Corp., and Rutgers University Center for Ceramic Research. This group will develop low-temperature sol-gel processing techniques to deposit thin-film ceramic structures on glass and polymer substrates, leading to large-area electrochromic devices suitable for electronically controlled "smart windows." ATP will award $3.4 million of the $7.1 million budget.

Advanced Technology for Microchannel Plates, awarded to Galileo Electro-Optics Corp. This project will adapt fabrication technologies from the semiconductor industry to the manufacture of electron-multiplying microchannel plates of higher quality and at lower cost than conventional techniques. ATP will finance $1.9 million of the $3.3 million budget.

Plasma and Phosphor Technology for Mercury-Free Fluorescent Applications, awarded to General Electric Company. This award is for the development of a mercury-free, uv-emitting, low-pressure plasma, a compatible, high-efficiency phosphor and attendant technology for a competitive, environmentally safe fluorescent light. ATP will fund $1.7 million of the budget's $3.7 million.

Fabrication of Clinical Prostheses from Biomaterials, awarded to Tissue Engineering, Inc. This project will develop the methodology for producing animal-derived extracellular matrix materials as prosthetic materials to support the regeneration of tissues and glands. ATP will award $1.9 million to this $4.1 million project.

Incoherent Combining of Radiation from a Two-Dimensional Array of Semiconductor Lasers, awarded to Cynosure, Inc. This project will develop micromachining techniques to mass-produce corrective lenses for laser diode arrays, and incorporate with diffractive optics in a low-cost, high-power laser technology suitable for surgical applications. ATP will finance $1.9 million to this project's budget of $3.3 million.

Transgenic Animal Models with Yeast Artificial Chromosomes, awarded to GenPharm International, Inc. This project will develop methodology for introducing large fragments of DNA, cloned in yeast artificial chromosomes, into transgenic mice for use in developing animal sources of fully human antibodies and animal models of human diseases. ATP will award $1.9 million of this $5.3 million project. □

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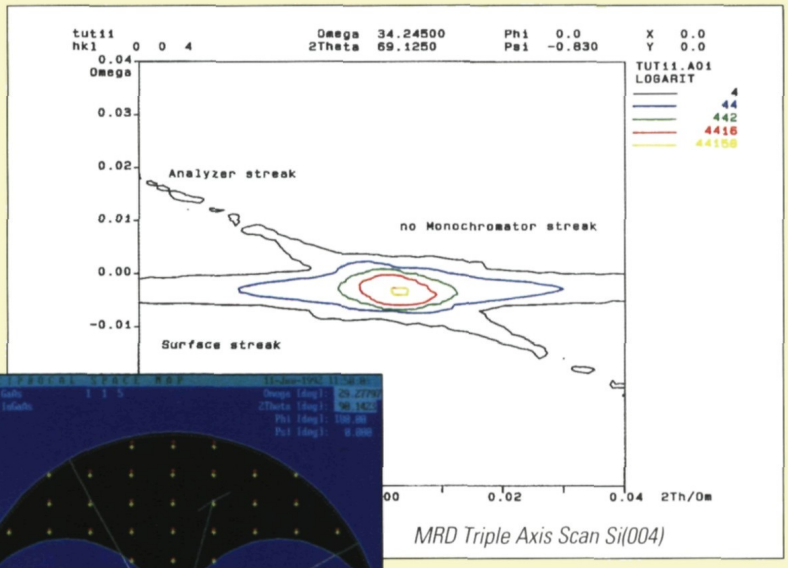

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