

**Voltaix**

CVD GASES

**Disilane****Highest Purity  
Available Anywhere**

(&gt;1500 ohm-cm)

**Pure or mixtures****Quality Control**

- ◆ 100% GC / MS analysis

**Packaging Options**

- ◆ Steel, polished steel or aluminum cylinders
- ◆ Pneumatic valves for fail-safe gas supply
- ◆ Choice of flow restrictor for added safety
- ◆ VCR outlets for UHV connection to system

**Growing Applications**

- ◆ Ge-Si alloys
- ◆ Polysilicon
- ◆ Low temperature epi
- ◆ BPSG, PSG, SG coatings
- ◆ High rate PECVD

**Now in Europe thru**

OTAVI MINEN AG

Telefon 0 61 96/70 28-0

Telex 4 07 2630 otav

Telefax 70 28 80

**Voltaix, Inc.**

P.O. Box 5357, 197 Meister Ave.

N. Branch, New Jersey 08876

Telephone: (201) 231-9060

Telex: 9102500134 VoltaixUQ

**DOE Notes****Energy Secretary Moves to Strengthen Nuclear Waste Management Operations**

Secretary of Energy James D. Watkins has implemented an immediate plan to strengthen the U.S. Department of Energy's nuclear waste management, environmental compliance and cleanup activities, assigning a higher priority to these programs.

Watkins has established the groundwork for an aggressive program to remediate environmental concerns. The program includes the appointment of Leo Duffy as Special Assistant for Coordination of DOE Defense Waste Management; preparation of an integrated Five-Year Cleanup Plan to characterize and prioritize all DOE sites; and establishment of a similar program in applied research and development with an emphasis on environmental remediation technology.

**Five-Year Cleanup Plan**

The Five-Year Cleanup Plan will integrate efforts by the National Academy of Sciences, state and federal regulatory agencies and technical commissions, and the scientific community, and is expected to be fully in place by August. Its objectives are to:

1. Assess the extent of environmental degradation or impairment.
2. Establish priorities to immediately address potential health effects, and to prevent further spread of existing contamination.
3. Ensure that proper program priorities are established and commitments are met.
4. Establish a well-focused research program to more effectively direct funds toward the development of the best and most needed technology.
5. Develop a safe, efficient and expedient plan at each site to remediate environmental contamination.
6. Work with the Congress and state regulatory agencies to meet the timetable and organizational requirements to ensure the success of the first and each subsequent state-specific Five-Year Plan.
7. Recommend sources of funding and methods of oversight to ensure that resources are effectively utilized and that program milestones and goals are achieved.

**Applied R&D Plan**

The objective of Watkins' R&D plan is to assess current technology development and activities and provide a basis for future

research, development and demonstration of new and innovative environmental technologies.

A "Lead Laboratory" concept will be considered to focus and utilize specialty capabilities available in the DOE laboratories. Scientists currently working on these and other applicable technologies will be redirected to apply a segment of their efforts to studying environmental and waste management applications.

Full advantage will be taken of work being done by the Environmental Protection Agency and the Nuclear Regulatory Commission, and to coordinate the department's efforts to complement existing and future programs in these agencies.

The research program will focus on four actions:

1. Minimize waste in current production through control and chemical substitution.
2. Reduce the current environmental and health hazards through development of technologies in chemical extraction, bioremediation and, where feasible, the application of bioengineering to neutralize *in situ* the toxic components of the existing contaminated sites.
3. Develop robotic technologies to reduce the potential hazard to the public, remediation technicians, and decontamination-decommissioning crafts.
4. Explore technologies not previously considered for application to this field but used in the fields of oil, gas exploration, chemical and laser separation, radio-frequency heating and plasma cupola melting of soil.

**Final Study on Dry Cask Storage Sent to Congress**

A DOE study concludes that existing technologies are technically feasible, safe and environmentally acceptable options for storing spent fuel at the sites of civilian nuclear reactors—at least until a federal facility is available to store the fuel.

The department conducted the study to evaluate the cost and impact of using dry casks for storage of spent nuclear fuel at civilian nuclear reactor sites until a geologic repository is available. Now in its final version, the study, with comments from the Nuclear Regulatory Commission, has been sent to Congress in response to a requirement of the Nuclear Waste Policy Act. It was prepared by DOE's Office of Civilian Radioactive Waste Management.

Most spent fuel is currently stored under water in pools at reactor sites, but some utilities need additional storage capacity. For this reason, several dry storage options are being considered by utilities for ex-

panding on-site storage capacity.

Utilities are also considering other technologies to expand existing pool capacities through re-racking and fuel rod consolidation. The study also evaluates these other technologies.

Copies of the report, *Final Version Dry Cask Storage Study*, are available from Information Services Division (RW-43), Office of Civilian Radioactive Waste Management, DOE, Washington, DC 20585; (202) 586-5722.

### NSF Notes Young Scholars' Interest in Science Fostered by NSF Program

With the announcement of 69 new awards in the National Science Foundation Young Scholars Program, 2,200 high-ability secondary school students will be able to participate in science, mathematics, and engineering advancement projects.

The Young Scholars Program, initiated last year with NSF funding of \$3.7 million, is designed to excite students entering grades 8-12 about science careers by offer-

ing them the opportunity to work side-by-side with research scientists.

Funding in fiscal year 1989 is \$7 million, which in addition to the new awards will support a second year for 68 projects funded last year. In all, more than 4,700 students will participate in projects this summer.

The program emphasizes student participation in the process of scientific discovery. Interaction with practicing scientists is an important component of project activities, and in many projects students will work as members of faculty research teams on projects aimed at developing the students' interest in science careers. In addition each project will have followup activities involving parents and additional students and teachers in the home schools.

Of the funds awarded in FY89, 17% will support activities in the life sciences, 13% in engineering, 29% in mathematics and computer science, 6% in physics, 12% in chemistry, 5% in the earth sciences, and 17% in multidisciplinary projects. Among the new Young Scholars projects, the

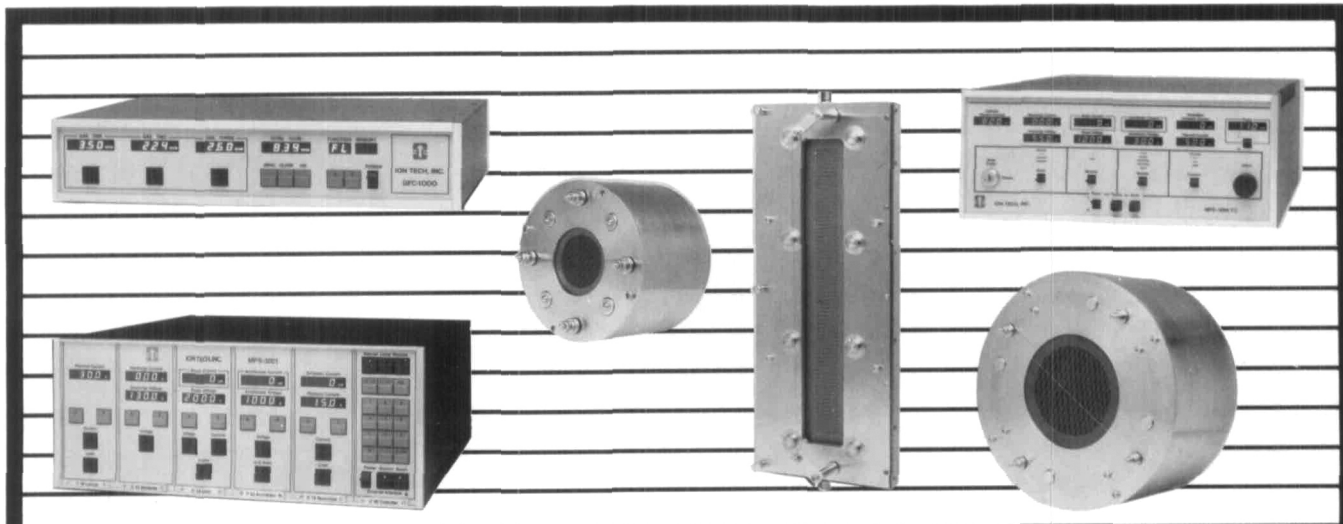
American Chemical Society will initiate an eight-week summer research project for 40 minority students at four universities around the country. Students will present their research at a professional society meeting in the fall.

### NSF Presidential Young Investigator Awards Help Science Faculty Shortage

To address growing faculty shortages in scientific and engineering fields, the NSF has announced the selection of 197 academic scientists and engineers to receive Presidential Young Investigator Awards.

The awards, which fund research by faculty members near the beginning of their careers, are intended to help universities attract and retain outstanding young PhD scientists who might otherwise pursue nonteaching careers. Each young investigator can receive up to \$100,000 per year for five years in a combination of federal and matching private funds.

First announced in 1983, the awards represent a partnership among private industry, the federal government, the



## Ion Tech: Your One Source

- Complete line of round and linear broad beam ion sources
- Microprocessor-based power supplies with RS-232 port for remote control, datalogging and errorlogging
- Sources operate with beam energies ranging from 50-2000eV
- Sources are UHV compatible, run on inert or reactive gas and retrofit easily by mounting internally or on a chamber flange
- GFC-1000 Gas Flow Control System provides integrated gas flow control with source control for optimum operation



**ION TECH, INC.**

2330 East Prospect  
Fort Collins, CO 80525  
Telephone: 303/221-1807  
Facsimile: 303/493-1439

investigators, and their academic institutions. Each grant consists of annual base NSF funding of \$25,000 plus an additional amount up to \$37,500 of matching funds from NSF and the private sector.

Any U.S. institution that awards a baccalaureate, master's, or doctoral degree in a field supported by NSF is eligible to participate in the program. Institutions may nominate faculty members who are holding or have been offered tenure-track positions as of the time of nomination.

For further information on the new awardees, write PYI Awards Program, Division of Research Career Development, Room 630, NSF, 1800 G Street NW, Washington, DC 20550.

**Renewal Awards Approved for Five Engineering Research Centers**

The National Science Board (NSB) approved five-year renewal awards to NSF Engineering Research Centers (ERCs) at Brigham Young University jointly with the University of Utah, Carnegie Mellon University, the University of Illinois, Lehigh University and Ohio State University. Recommended first-year renewal funding for

these five ERCs, begun in 1986, totals \$10.2 million.

Brigham Young University and the University of Utah will receive about \$1.8 million from NSF this year to continue research at their joint ERC on Advanced Combustion. The scientists and engineers at the center are focusing on fundamentals of combustion, and are creating models for controlling burning in boilers, furnaces and waste incinerators.

The ERC for Engineering Design at Carnegie Mellon University will receive approximately \$2.4 million in 1989 for further studies in computerized design methodology. CMU's research focuses on identifying design considerations common to electronics, chemical, civil and manufacturing engineering, and on creating the next generation of design tools.

The ERC for Compound Semiconductor Microelectronics at the University of Illinois, Urbana, will receive about \$2.2 million this year for research contributing to the development of optoelectronic integrated circuits.

Lehigh University's ERC for Advanced Technology for Large Structural Systems

will receive a first-year renewal grant of approximately \$2 million to develop an integrated systems approach to design, construction and performance monitoring of large structures such as buildings, bridges and industrial plants.

The ERC for Net Shape Manufacturing at Ohio State University will receive about \$1.8 million in 1989 to continue research leading to improved new shape processes—molding, forging, sheet forming and casting.

ERCs, the first of which were established in 1985, are large, campus-based organizations jointly funded by NSF and industry, often with other federal or state funds. NSF support for ERCs has been equally matched by other sources.

The 18 ERCs bring together faculty, students and industrial professionals from a variety of engineering and scientific disciplines seeking solutions to fundamental research problems that will lead to better designs, materials, devices, tools, processes and systems. Researchers at the ERCs also develop new multidisciplinary engineering courses and curricula related to questions under study in ERC laboratories.

**MeV Ion Beam Systems and Components**

The Pelletron Accelerator Systems range in terminal potential from 100 kV to 25 MV for RBS, PIXE, AMS, and NRA and other applications. The NEC beam line components are ultra-high vacuum compatible. The NEC acceleration tubes are metal-ceramic bonded and fully bakeable. All NEC valves are metal sealing.

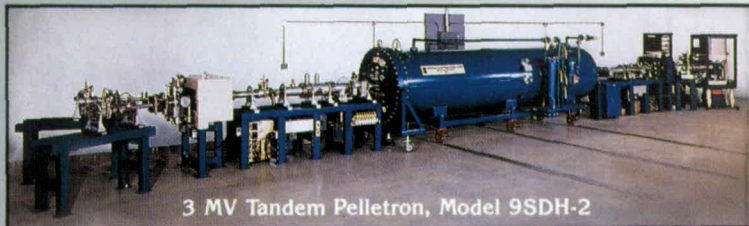
- Beam Steerers
- Raster Scanners
- Slit Systems
- Faraday Cups
- All Metal Valves
- Fast Closing Valves
- Ion Sources
- RBS and PIXE
- Beam Profile Monitors
- Electrostatic Lenses
- Beam Line Insulators
- Foil/Target Changers
- Gas Metering Valves
- Titanium Sublimators
- Accelerator Tubes
- Light Link Systems

Systems and components in 36 countries.

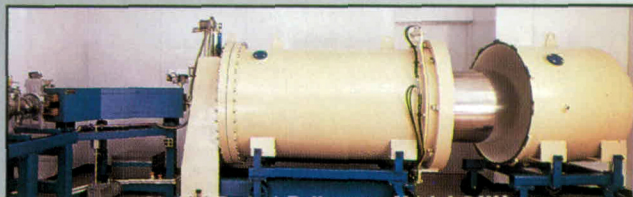


**National Electrostatics Corp.**

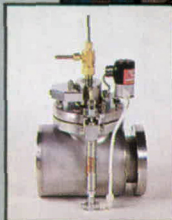
Graber Road, Box 310  
Middleton, Wisconsin 53562-0310  
Tel. 608/831-7600 • Telex 26-5430 • Fax 608/256-4103



3 MV Tandem Pelletron, Model 9SDH-2



Single Ended Pelletron, Model 3UH



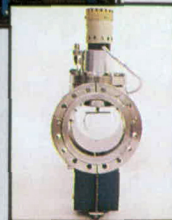
Faraday Cups



Slits



Valves



Beam Profile Monitors