# Vacuum Society honors Farnsworth and Kazmerski

As part of its annual meeting this November, The American Vacuum Society will present the Medard W. Welch Award to Harrison B. Farnsworth and the Peter Mark Memorial Award to Lawrence L. Kazmerski. Farnsworth will be honored for his pioneering studies of atomically clean surfaces, and Kazmerski will be recognized for his investigations on the electrical and chemical properties of solar cells.

FARNSWORTH

KAZMERSKI

The Welch Award was established in 1969 to commemorate the efforts of Medard W. Welch in founding and supporting the AVS by recognizing and encouraging outstanding theoretical or experimental research in fields of interest to the AVS. The award consists of a solid gold medal and a thousand dollars. Farnsworth has been a leader in the field of surface science since his graduate work at the University of Wisconsin in 1922, when he wrote a paper in the Physical Review on the reflection of electrons from metal surfaces. He continued these investigations at the University of Maine until 1928 when he joined Brown University where he remained for 45 years. His investigations have covered a wide range of topics in surface physics, including the fundamental work on inelastic diffraction, the use of radio tracer techniques to study adsorption, and the development of ion bombardment cleaning techniques. He was the first to observe the reconstruction of elemental semiconductor surfaces, to investigate the surface of vacuum-cleaved crystals, to study the effects of surface damage on catalytic reactions.

The Mark Award was established in 1979 as a memorial to Peter Mark, the editor of the *Journal of Vacuum Science and Technology* from 1975 until his death in 1979. It recognizes the outstanding theoretical and experimental work of a scientist or engineer under the age of 35 and includes a $500 prize. Kazmerski is cited "for demonstrating the correlation between the electrical and chemical properties of interfaces in polycrystalline photovoltaic devices." Kazmerski, now in the photovoltaic devices and measurement branch of the Solar Energy Research Institute, received his PhD in 1970 from the University of Notre Dame. He joined the University of Maine's Electrical Engineering Department in 1971, where he continued his research until 1977 when he became senior scientist at SERI. The topics of his published papers include photovoltaics, thin films, surface and interface phenomena, molecular-beam epitaxy and semiconductor defects.

## Engineering awards to VLA, coal process and windmill

The National Society for Professional Engineering has announced selections in their annual recognition of engineering achievements. Among the ten examples cited are the National Radio Astronomy Observatory's Very Large Array (VLA) Telescope Facility at Socorro, New Mexico, the high-gradient magnetic separation of coal at Oak Ridge National Laboratory in Tennessee, and the Makani Huila 200-kW Wind Turbine at Kahuku, Hawaii.

The VLA radio telescope is located on the Plains of San Augustin, an ancient seabed 7000 feet above sea level, near Socorro, New Mexico. The VLA consists of 27 antennas, each 82 feet in

diameter and 92 feet high, arranged in three equidistant radial arms. The arms form a Y-shaped array in which two arms are 13 miles long and the third is 11.8 miles. The antennas can be moved to 72 observing stations by a 65-ton self-propelled transporter that runs on railroad tracks between them. At the center of the complex is a control building that communicates with the antennas via three 60 millimeter transmission wave guides running to the observing stations. The VLA Radio Telescope is the world's largest single radio interferometer and is a project of the National Science Foundation, Associated Universities, Inc., Washington, D. C., The National Radio Astronomy Observatory and BWH–CVA Joint Venture, Albuquerque.

Oak Ridge National Laboratory has improved a magnetic separation technique to permit the removal of 40 to 70 percent of the inorganic ash and sulfur from coal. The new process, called high-gradient magnetic separation, places finely ground coal into wedged-shaped containers in a carousel ring that rotates through a magnetic chamber. Within each container are spaced discs of stainless steel mesh, each wire of which becomes magnetized as it enters the magnetic field, enhancing the inhomogeneity of the field. Because coal has a lower magnetic susceptibility than the impurities, the magnetized wires selectively attract and retain the impurities. This process was found to be more effective and cheaper than the traditional washing method now used.

At Kahuku, Hawaii a 200-kW wind turbine named Makani Huila is generating enough energy to save 1900 barrels of oil a year. Makani Huila, built on a site 350 feet above sea level on Oahu's north shore, consists of a horizontal-axis rotor with two blades that together measure 125 feet. The rotor, which looks like a large airplane propeller, turns at 40 revolutions per minute and drives an 1800 rpm alternator through a gearbox. The assembly is mounted on a 100-foot tower and is able to achieve its 200-kW output due to the almost constant winds in the area; the speed of these trade winds ranges from 15 to 35 mph. Built by Westinghouse Corporation, the turbine is a project of the Department of Energy and the National Aeronautics and Space Administration and is operated with the cooperation of the Hawaiian Electric Company.

## James L. White wins 1981 Bingham Medal

The Society of Rheology has made its annual presentation of the Bingham Medal for 1981 to James Lindsay White. The medal is awarded to a