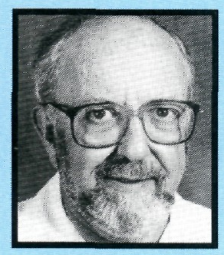
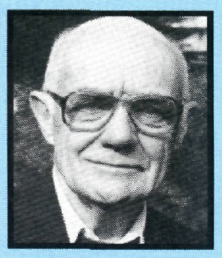
vate every art and science which may tend to advance the interest, honor, dignity, and happiness of a free, independent, and virtuous people." The academy brings together leaders from academia, government, business, and the arts. Murray is one of 205 new fellows from the United States and 40 from overseas, bringing the total to 3200 fellows and 500 foreign members.

Osteryoung Receives Bredig Award



Robert Osteryoung, professor of chemistry at the State University of New York at Buffalo, is the 1992 recipient of the Max Bredig Award in Molten Salt Chemistry from The Electrochemical Society. Osteryoung is being honored for his contributions to molten salt chemistry. He received the award at the 181st International Meeting of the Electrochemical Society on May 19 in St. Louis. Osteryoung is currently ANALYTICAL CHEMISTRY's Associate Editor for electroanalytical chemistry.

Fenn Receives Award from ASMS

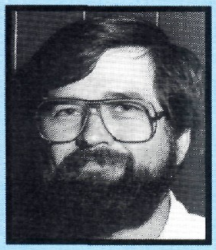


John B. Fenn, professor of applied science and chemistry at Yale University, is the 1992 recipient of the Distinguished Contribution in Mass Spectrometry Award from the American Society for Mass Spectrometry.

Fenn, who is being recognized for his work in electrospray ionization (EI), will receive the award June 3 at the ASMS Conference on Mass Spectrometry and Allied Topics in Washington, DC.

Steadily building on work that began in the 1970s, Fenn and his colleagues reported, at the 1988 ASMS meeting, that EI could produce intact ions from a series of protein molecules with molecular weights up to at least 50,000. Within months, others had not only repeated and confirmed Fenn's experiments but also demonstrated that the technique works on other biopolymers, including oligonucleotides and carbohydrates. Accuracy of the determination is on the order of tens of parts per million, as opposed to the 5–10% level obtained with conventional methods. Although the upper limit for size has not been identified, intact ions with 4000 charges have been produced from PEG oligomers with molecular weights up to 5,000,000.

Engstrom Receives Buckley Award



Royce Engstrom, professor of chemistry and chairman of the chemistry department at the University of South Dakota, is the recipient of the 1992 Ernest L. Buckley Award.

Engstrom is being honored for his basic research in microelectrodes and their application to medical and environmental analysis, as well as for his work as project director of the Experimental Program to Stimulate Competitive Research (EPSCoR). The award, sponsored by the National Science Foundation, was presented to Engstrom on Feb. 19 at the 6th Annual Governor's Economic Development Conference in Pierre, SD.

Random Breakage

Random breakage is generally thought of as the reason students buy breakage cards for chemistry labs. However, random breakage also refers to a new technique by which the positions of genes on chromosomes are mapped. The technique was developed by John Game, Maren Bell, and Robert Mortimer of the Cell and Molecular Biology Division of the Lawrence Berkeley Laboratory and Jeff King of the Department of Molecular and Cell Biology of the University of California at Berkeley. The technique ascertains the distance of a gene (or a specific sequence of DNA base pairs) from the end of its chromosome. By comparing these distances for each gene within a given chromosome, the respective positions of those genes can be determined.

A sample containing a number of molecules of a specific type of chromosome is irradiated with low-energy X-rays at an intensity such that the molecules are broken only once at random locations. The fragments are then separated according to size using gel electrophoresis. The Southern blotting technique is then used to transfer the fragments onto a special paper that makes those containing a selected gene visible when the gene is hybridized with a radioactively labeled probe. Because of the size distribution of the fragments, two threshold changes in the intensity of the probe's signal can be seen in the pattern formed below the unbroken chromosome molecule. The positions of those changes represent the distances in base pairs from the gene to the end of the chromosome.

The technique was developed using four previously mapped yeast genes. Unfortunately, random breakage cannot be used on once-broken human chromosomes because they are too large to be resolved by gel electrophoresis. However, once a human gene known to be on a particular chromosome is cloned, random breakage can be used to pinpoint its location using restriction enzymes. These enzymes cut DNA at specific sites, selectively fragmenting the chromosome. Because the position of the fragments along the chromosome is known, the genes on the fragment can then be mapped.

Reminder: The 45th Annual Summer Symposium on Analytical Chemistry will be held at Utah State University in Logan, UT, June 23–25. Cosponsored by the Division of Analytical Chemistry and the JOURNAL, this year's symposium includes sessions on fluorescence instrumentation and methods, microscopy and single-molecule detection, materials and photolytic chemistry, fluorescence from organized structures, and photothermal/photoacoustic calorimetry. For more details and registration information, see the January 15 issue (p. 94 A) or contact Stephen Bialkowski, Dept. of Chemistry and Biochemistry, Utah State University, Logan, UT 84322-0300 (801-750-1907). For questions concerning the technical program, contact Joel Harris, Dept. of Chemistry, The University of Utah, Salt Lake City, UT 84112 (801-581-3585).