Bernd T. Matthias recipient of the Research Corporation Award

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Bernd T. Matthias, Professor of Physics at the University of California's San Diego campus, today was named the 1962 recipient of one of the highest honors in American science-- the Research Corporation Award.

The $10,000 Award was given for his achievements in the fields of superconductivity and ferroelectricity, Chancellor Herbert York announced.

The Research Corporation citation stated that Matthias' "far-reaching researches have given insight and stimulus to man's understanding of the material world and are destined to have widespread scientific and technological applications."

Dr. Matthias is the 27th recipient of the Award which was first given in 1925 to honor "a man of science who has made an outstanding contribution to human knowledge."

Eight scientists who have received the Award since World War II subsequently received Nobel Prizes for the work cited in their Research Corporation Awards.

Dr. Matthias, who came to the School of Science and Engineering at UCSD from the Bell Telephone Laboratories in 1961, will accept the Award on April 18 at a dinner in the Sheraton-East Hotel in New York City.

Superconductivity is a phenomenon discovered in 1911 by the Dutch physicist, Kamerlingh Onnes. He found that when certain metals are cooled to near absolute zero, that is, to about minus 459 degrees Fahrenheit, they will conduct an electric current without resistance.

The fact that the metals offer no resistance means that the current flows without generating heat-- with no loss of energy. Thus, literally no power is required to maintain the current flow in a superconducting metal, once it is started.

The superconducting materials which Dr. Matthias has discovered in the last 12 years have opened a new technology in the making of magnets. Using superconducting metal coils, a magnet needs only enough continuous energy for cooling, and to establish the magnetic field through an electric current. Once started, the current and, therefore, the magnetic field continues endlessly.

Dr. Matthias' curiosity about the nature and occurrence of superconductivity was aroused in 1950 by the late Nobel laureate, Enrico Fermi, when both were members of the physics staff at the University of Chicago. At that time, less than 30 superconducting metals had been discovered. In 1963, more than 500 superconductors are known to science, and most have been discovered by Dr. Matthias and his co-workers at the Bell Telephone Laboratories and San Diego.

His exhaustive research has changed superconductivity from what was thought a rare phenomenon to an event that is now known to occur very frequently, always at very low temperatures.

Parallel with his work in superconductivity, Dr. Matthias has also made important contributions in the field of ferroelectricity. Ferroelectrics are crystal substances which have electric properties similar to the magnetic properties of iron. Dr. Matthias recently has discovered some systems that are both ferromagnetic and superconducting despite original scientific belief that the two phenomena were incompatible.

The use of superconducting metals to make inexpensive magnets with large magnetic fields is of vital importance to both large and small laboratories and research institutions. To build a large magnet today requires an immense amount of power. At present, only a few institutions are able to afford large and expensive magnet installations-- those which can generate steady magnetic fields of 100,000 gauss. (A child's toy horseshoe-shaped magnet is usually capable of producing a few hundred gauss between its poles).

Commercial magnets available today do not exceed 68,000 gauss. Dr. Matthias foresees in the near future magnets capable of generating magnetic fields of more than 200,000 gauss. Only technical difficulties need be eliminated to construct these large magnets, he says.

The possibility of obtaining high-magnetic fields with very little power consumption is also having a large impact on the field of controlled nuclear power.

Magnetic superconducting lenses in electron cameras could make possible the direct observation of the atoms responsible for genetic coding in DNA molecules, some scientists believe.

Dr. Matthias was born in Frankfurt, Germany, in 1918. He received his Ph.D. in physics from the Federal Institute of Technology, Zurich, Switzerland, in 1943, and was a scientific collaborator at that institution from 1942 to 1947.

He came to the United States in 1947 and served on the staff of the Division of Industrial Cooperation at the Massachusetts Institute of Technology in 1947-48. He joined the technical staff of the Bell Telephone Laboratories, Murray Hill, New Jersey, in 1948.

Dr. Matthias was an Assistant Professor of Physics at the University of Chicago from 1949 to 1951, and returned to the Bell Labs in 1951. His association with the Bell Labs continues today.

He is a fellow of the American Physical Society and the Swiss Physical Society.

Given at irregular intervals before World War II., the Research Corporation Award has been made annually since 1946. It is intended to recognize outstanding scientific achievements not previously accorded major recognition.

The Award for 1961 was given to James D. Watson and Francis H. C. Crick, who received the Nobel Prize in 1962 for their revelation of the structure of DNA,, the fundamental replicative unit of living matter.

The Research Corporation-- established in 1912--is one of the oldest foundations in the United States. Its primary concern is the support and advancement of specific scientific research undertakings in U. S. colleges and universities.