

Dr. Bernd T. Matthias chosen "Man of the Year" in research

September 30, 1968

Dr. Bernd T. Matthias, professor of physics at the University of California, San Diego, has been chosen "Man of the Year" in research by Industrial Research, Inc., for his scientific contributions in superconductivity and ferroelectricity.

In addition to his professorship, Dr. Matthias is a member of the technical staff of Bell Telephone Laboratories in Murray Hill, N.J.

In announcing the \$1,000 award, Neil P. Ruzic, president of Industrial Research, Inc., praised Dr. Matthias for his numerous discoveries relating to superconductors--metals in which the electrical resistance becomes zero at temperatures near absolute zero (minus 460 degrees F).

Since it is difficult to cool materials to the extremely low temperatures needed for superconductivity, the quest among physicists has been to increase the temperature at which metals superconduct. This temperature, called the "transition temperature," has been increased in a wide range of materials by Dr. Matthias and his associates.

Superconductivity has made possible the construction of very small electromagnets that produce large magnetic fields with no heat development. Tiny superconducting memory circuits for computers can pack large amounts of information in extremely small volumes.

Engineers also are experimenting with superconducting power lines to transmit high power levels across long distances. Of even more importance to scientists, the phenomenon of superconductivity has been a major factor leading to the understanding of the behavior of materials at low temperatures.

Dr. Matthias' findings have led him to formulate rules which have brought increased order to the study of superconductors and have enabled him and others to predict the existence of new ones.

Only about 30 metals with superconducting properties were known when Dr. Matthias became interested in the field. Today, more than 1,000 superconducting metals are known--largely due to the discoveries of Dr. Matthias and his co-workers at Bell Telephone Laboratories and the University of California.

A plaque and \$1,000 will be presented to Dr. Matthias at the Industrial Research awards banquet at the New York Hilton Friday, October 4. The banquet will climax the annual "I-RIOO" new product exhibit and the National Conference on Industrial Research.

Industrial Research, Inc., which has its headquarters in Beverly Shores, Ind., publishes Industrial Research, Materials Applications, Electro-Technology and Oceanology International magazines. The "Man of the Year," who is cited for recent significant achievements in applied science and technology, is featured on the cover of Industrial Research as well as in the other publications.

During the last year and a half, Dr. Matthias, together with his associates, has discovered that phosphorus and beta-beryllium can superconduct and has raised the superconductivity transition temperature to 21 degrees Kelvin.

The latter was the first major step forward in superconductivity since the discovery of niobium tin and niobium aluminum more than 10 years ago. Those materials superconducted at 18 K--a temperature which had not been approached until now.

The superconductivity of the new material--Nb₃(Al^{3/4}Ge, A) an intermetallic compound of niobium, aluminum and germanium--is expected to change superconductivity technology radically. Its transition temperature is substantially higher than the boiling point of hydrogen. The implications also open possibilities of continuous magnetic fields which may vastly exceed 200 kilogauss over substantial volumes.

Dr. Matthias holds a joint appointment at Bell Telephone Laboratories and UCSD, where he is associate director of the Institute for Pure and Applied Physical Sciences.

Born in Germany, he received his doctorate in physics from the Federal Institute of Technology in Zurich, Switzerland, where he remained to perform research for five years.

In 1947, Dr. Matthias joined the scientific staff of Massachusetts Institute of Technology and in 1949 became an assistant professor of physics at the University of Chicago for two years.

He has been a member of the Bell Telephone Laboratories technical staff since 1948 and has been associated with UCSD since 1961.

Dr. Matthias was awarded the Research Corporation Award in 1962 and the John Price Wetherill Medal in 1963 for his work in superconductivity and ferroelectricity.

He has been elected a member of the National Academy of Sciences and a fellow in the American Academy of Arts and Sciences and the American Physical Society.