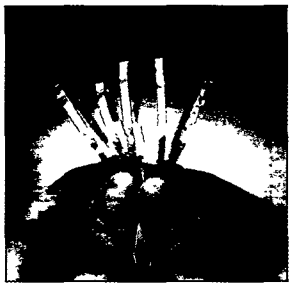
motor, the Meissner motor, based on high-temperature superconducting properties. That same year, the laboratory was named a national center for the study of high-temperature superconductivity applications.

In the first four years since the 1986 discovery of high-temperature superconductivity, Argonne scientists reported 18 superconducting inventions, including: determination of the precise position of oxygen atoms in high-temperature superconducting ceramics; production of high-temperature superconducting bearings that hold the world's record for lowest losses; extrusion of wire from high-temperature superconducting materials — the first laboratory in the world to do so. They later grew single crystals of the material and discovered that current is carried primarily through chains of copper and oxygen in the crystals. They also determined the crystal structure of the first high temperature superconductor — yttrium barium copper oxide. In 1990, Argonne chemists surpassed their own world's record for the highest transition temperature for an organic superconductor. The following year, scientists from Argonne and Northwestern University discovered a new family of high-temperature superconductors made of a compound of oxygen, copper, gallium, strontium and yttrium.

Argonne's designation as one of three Superconducting Pilot Centers in the country attracted the interest and participation of private industry. More benchmark successes were achieved. A private superconductivity company, Illinois Superconductor Corp., was founded in 1990. It is the first superconductivity company to be formed as part of a joint cooperative program among state and federal government, private industry and academia. It had the first high-temperature superconducting commercial product on the market — a liquid nitrogen depth sensor used in hospital equipment. In 1990, Argonne and Westinghouse Science and Technology Center developed an electrical lead that achieved a world record for current carried by a practical high-temperature superconductor device. Three years later, Commonwealth Edison and Argonne developed the world's most efficient superconducting magnetic bearing. It could revolutionize the way electricity is stored and how it is supplied to consumers. Teamwork between scientists from Argonne and Intermagnetics General Corp. produced the strongest magnetic field ever generated by a coil of high-temperature superconducting wire — an important innovation for motors and generators. In January 1994, they would set an even stronger record.



A "super coil" of flexible superconducting tape loses all resistance to electricity when cooled by liquid nitrogen.

Superconductors are tested by Bogdan Dabrowski in a high-pressure synthesis chamber.

Balu Balachandran stretches a silver-clad high-temperature superconductor wire.