Superconducting technology

Materials Development

Search of New Superconductors: Oxides, Borides, Carbides, Nitrides, Sulfides, Pnictides → **Room Temperature Superconductors**

Wire Development: long length (~10 km), high current density, low cost, high reliability → **Power & Magnet Application**

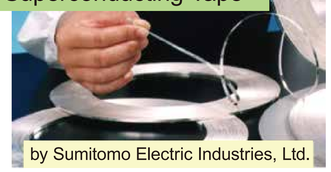
Film Development: large area, interface control, high yield

Device Developments
Integration

Josephson Junction
SQUID, SFQ

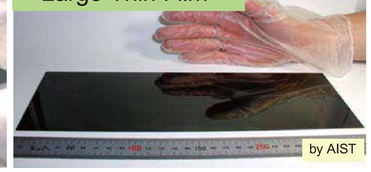
Electronics

High-T_C Superconducting Tape



by Sumitomo Electric Industries, Ltd.

Large Thin Film



by AIST

Power & Industrial Instruments Application

Magnet Application: MRI, NMR, Magnetic Separation, Accelerator → **Medical Treatment, Biotechnology, Environment, Physics**

Transportation System: Magnetic Levitation (MAGLEV) Train, Motor, Generator, Transformer, Feeder → **Fast & Energy-Saving Transportation**

Power & Energy Application: Power Storage, Cable, Nuclear Fusion → **Energy Conservation Power Grid**

by Hitachi Medical Co.

Medical MRI

by Sumitomo Electric Industries, Ltd.

Power Cable

HTS Power Cable Test

by TEPCO

MAGLEV Train

by JR Tokai

Nuclear Fusion

by National Institute for Fusion Science

Global Superconductor Grids

Detector Application: Radio Observatory, Detector for Elementary Particle, Electromagnetic Wave Geophysical Exploration → **Advanced Science & Technology**

Medical & Metrological Application: Magnetocardiography, Magnetoencephalography, Immunodiagnosis, Food Evaluation, Measurement Standards → **Healthcare, Life, Industrials**

Electronics

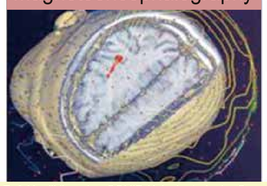
Information Processing & Communication: Ultra highspeed CPU, Router → **High-Performance Communication & Information Processing**

Quantum Information: Quantum Communication & Computation → **Advanced Information Technology**

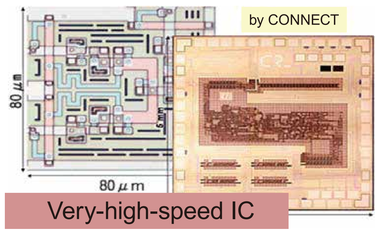
Radio Telescope

(C) ESO/ALMA

Magnetoencephalography



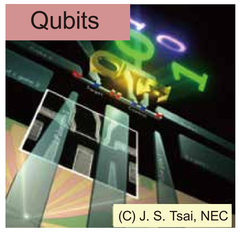
Ref. Noujikikagaku -SQUID Keisoku to Igaku Oyo- Eds by H. Hara & S. Kuriki, Ohmsha (1997)



by CONNECT

Very-high-speed IC

Qubits



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