



IISc's rare feat in test for superconductivity

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Highlights

- For the first time, researchers from the Indian Institute of Science (IISc) Bengaluru have been able to achieve superconductivity at ambient temperature and pressure. A large number of materials have been found to undergo normal to superconducting transitions. But such transitions require extremely low temperature and/or extremely high pressure. Achieving this transition at ambient temperature and pressure therefore gains great significance.
- A material is said to exhibit superconductivity when it is able to conduct electric current with practically zero resistance. So unlike the conventionally used materials such as copper and steel, a superconductor can carry a current indefinitely without losing any energy.
- IISc, observed superconductivity in nano-sized films and pellets made of silver nanoparticles embedded in a gold matrix. Superconductivity was observed at minus 37 degree Celsius. The resistance observed is very low — 10^{-4} ohms — but not zero.

Meissner effect

- IISc team did observe the Meissner effect though the effect is relatively low. Meissner effect is where the magnetic fields are completely expelled by the superconducting state and is a crucial evidence for superconductivity.
- Though they didn't observe perfect Meissner effect, they did observe samples becoming strongly diamagnetic, which is consistent with superconductivity, "A diamagnetic material is repelled by magnetic field and is consistent with superconductivity."

Source: [The Hindu](#)

