Superconductivity. Discovered 100 years ago, continues to fascinate and attract the interest of scientists and non-scientists all around the globe. Being the only quantum phenomena visible to the naked eye, it offers a unique window to quantum mechanics.

Now you can touch it as well. The 'Quantum Levitation' variety of kits offer a unique opportunity to witness true levitation and feel the quantum locking forces.

Designed for Science Education. Our kits were specially designed for large audience demonstrations.

⚠ WARNING!

The **"Quantum Levitation"** experiment uses extremely strong neodymium magnets. These magnets, if not handled carefully, can cause serious injury. Keep the magnets away from magnetic materials and far from sensitive electronics.

Superconductivity

Superconductivity is a quantum phenomenon of zero electrical resistance. It was discovered in 1911 by a dutch physicist named Kamerlingh Onnes. Superconductivity occurs only below a certain critical temperature(Tc). Metals such as aluminum, lead, tin become superconductors only at temperatures close to the absolute zero (-273.15C, - 459.67F).

In 1986 a new family of superconductors was discovered having a much higher Tc, close and even higher than the boiling temperature of liquid nitrogen (-196.15C,-321.07F).

Meissner Effect

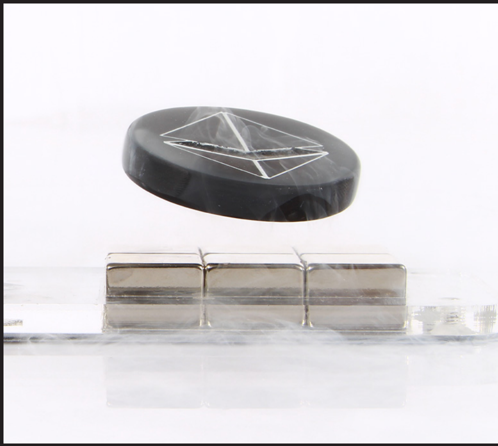
The expulsion of magnetic field from a superconductor is an intrinsic property of any superconductor. Below a certain

magnetic field the superconductor expels nearly all the magnetic flux. It does that by driving currents near its surface. These currents produce a magnetic field within the bulk that cancels the external field.

Flux Pinning

In some cases the magnetic flux becomes locked or "pinned" inside a superconductor. Flux pinning is desirable in high - temperature ceramic superconductors to prevent flux movements which introduce a resistance and dissipates energy. The pinning is achieved through defects in the crystalline structure of the superconductor usually resulting from grain boundaries or impurities.

QUANTUM LEVITATION



QUANTUM LEVITATOR

A truly Quantum Experience

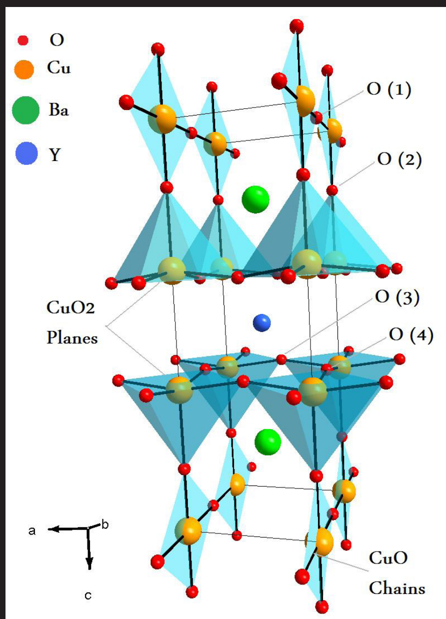
www.QuantumLevitation.com

QUANTUM LEVITATOR

The **levitators** are made of encapsulated superconducting sheets, protected against moisture and physical damage. The superconductor material is a compound made from yttrium, barium, copper and oxygen, YBa2Cu3O7-x. Its atoms arranged in an orthorhombic crystallographic structure (a cuboid shaped unit cell). The material is a bad electrical conductor at room temperature and becomes a superconductor below 90K (~297.6º Fahrenheit).

The superconductor thickness is 1-3microns, crystal grown on top of a metallic substrate (hastalloy/ stainlesssteel) and protected by silver and aluminum layers.

A white foam is attached to the superconductor for thermal insulation.



HANDLING INSTRUCTIONS

The superconductor inside the **Quantum Levitator** is sensitive to moisture. If not handled properly it will lose its superconducting properties. You should always let the levitator warm up and dry after usage. We recommend that you store the levitator in dry atmosphere, preferably inside a sealed container with silica gel.