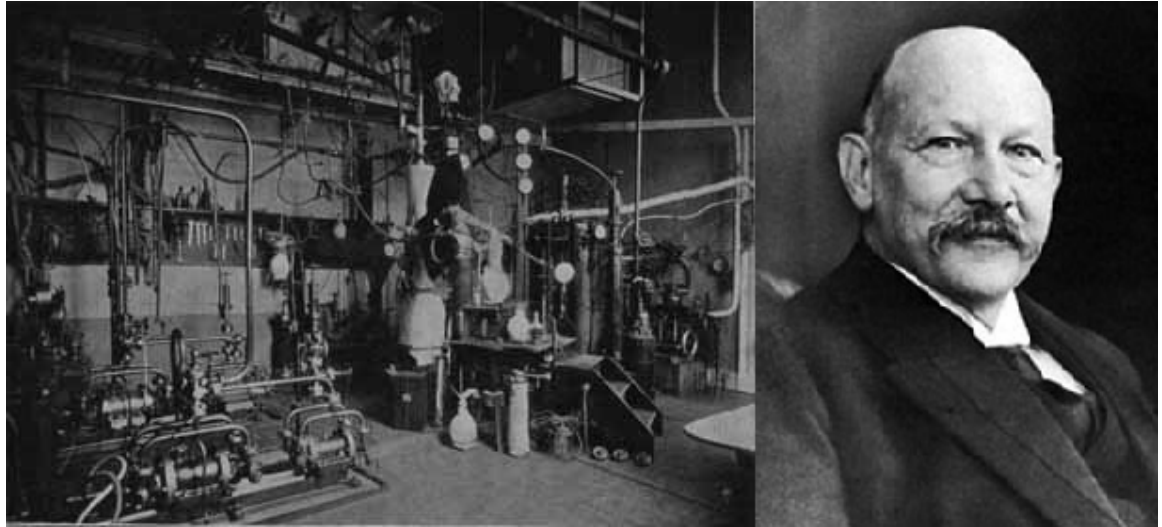


What is Superconductivity ?



In 1911, Heike Kamerlingh Onnes, a Dutch Physicist, invented the phenomenon of superconductivity. He observed that at liquid helium temperature (4.2K) the resistance of mercury totally disappeared. He called this dramatic decrease in resistance as the phenomenon of superconductivity. It was also observed that near absolute zero, several other metals suddenly show near zero electrical resistance. For this outstanding discovery Kamerlingh Onnes was awarded the Nobel prize of Physics in 1913.

The theory of superconductivity was devised in 1957 by J. Bardeen, L.N. Cooper and J.R. Schrieffer. This is known as BCS theory. For the last 45 years, scientists all over the world are busy in searching superconducting materials for room temperature use. Niobium-tin alloy is one material which shows super conduction at 18K. Niobium-germanium is a superconductor at 23K. In 1986, L.X. Mueller developed lanthanum-barium which is superconductor at 35K. In 1987, Ching Wu Chu developed Yttrium barium and copper with a transition temperature of 94K.

The power requirements of electric motors and electromagnets would become minimal with the windings of superconducting wires. Traditional wheel may be replaced by magnetic levitation. New superconductive switches and memory cells for computers are being developed using the phenomenon of superconductivity.