آزمايش رسانايي الكتريكي در جامدات Electrical conductivity in solids Exp

SRequired equipments for the Experiment:

Noble metal resistor / semiconductor 440402 Power supply unit, 0 - 30 VDC with Galvanometer 440404 Demonstration bridge : 440401 Resistance decade 0 – 1111 Ω 440403 Electrical Oven 110019 Thermometer & Electronic dimmer 330104 Morse Key 440405 Connecting leads (N=7) 110000

Descriptions:

The temperature-dependency of the specific resistance r is a simple test for models of electric conductivity of conductors and semiconductors. In electrical conductors, r increases with the temperature, as the collisions of the guasi-free electrons from the conduction band with the atoms of the conductor play an increasingly important role. in semiconductors, on the other hand, the specific resistance decreases as the temperature increases, as more and more electron move from the valence band to the conduction band, thus contributing to the conductivity. These experiments measure the resistance values as a function of temperature using a demonstration bridge. For the noble metal resistor, the relationship R = Rq (T/q); q = 240 K: Debye temperature of platinum is verified with sufficient accuracy in the temperature range under study. For the semiconductor resistor, the evaluation reveals a dependency with the form R a e -(DE/2KT); K = 1.38*10-23 J/K : Boltzmann constant with the band spacing E=0.48 eV.

Warranty : One year

After sales service : Ten years

