

Abstract

The order-disorder transformation in the alloy Cu_3Au has been studied at pressures ranging up to 21 kbars by means of electrical resistance measurements made while the sample is at high temperature and under pressure. The rate of change of the critical temperature with pressure is $2.1^\circ\text{K}/\text{kbar}$ from zero to 21 kbar. The latent heat of transformation at the critical temperature is 170 cal/mole which is in accord with previous calorimetric measurements. The kinetics of the order transformation below T_c are adequately described by the homogeneous reaction rate equation and an activation volume of $6.8 \text{ cm}^3/\text{mole}$ of atoms. The magnitude of this activation volume indicates that the formation of vacancies on the gold sublattice is the rate limiting step in the homogeneous ordering process.