INTRODUCTION

Application of pressure often stabilizes new, equilibrium phases in a substance. An equally important, and as yet hardly studied effect of pressure, is to change phase transformation kinetics. This paper reports the results of an investigation of the effect of high pressure on the kinetics of the order-disorder transformation in the alloy Cu_3Au. This particular transformation in this particular alloy was chosen because, among all solid state phase transformations, it is one of the most fully studied and best understood at room pressure.[1] Because of this, identification of the influence of pressure is made easier and more certain than would otherwise be possible.

The rate of the order-disorder transformation in Cu_3Au is most effectively studied by means of isothermal experiments: The alloy is equilibrated at temperature T_1 and then suddenly brought to temperature T_2, which may be higher or lower than T_1, and the progress of the transformation observed over a period of time. If $T_1 > T_c > T_2$, where T_c is the critical temperature for ordering, the transformation involves a nucleation step and is, consequently, heterogeneous. However, if T_1, $T_2 < T_c$ and if the alloy has been properly prepared with a large antiphase domain size, the transformation is homogeneous and is fully described by a single rate equation. It is with this aspect of the transformation that we deal in the present work. The theory of the homogeneous change