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olid lines repres st fit to the expe he data is though: rtainty. No data quipment limitati ressure range. ( closely with the e Bal-Ball transit rk has a pronoun h the positive sl nalysis (see Fig. show any resista the positive slop ms unlikely that as a resistance res. The transition rements were shar much less slugg Ball transition. resent work is for approximately wh and others 2 show t high-pressure xand Hall indic nges to hcp struct -Ball transition. ce transition repor in the present w sloping curve is n an important c rve determined at The fusion curve inues to the high pparatus and if ex would cross the re ity of 140 kb. resistance trans! rresponds to melt curves for the varig. 2. The transit d the BaI-Ball to The melting trans! and sluggishness as was observed in their resist. The Bal and behavior, each ha fficient of resista sistance of the ! indicate a very ient of resistance between the resist

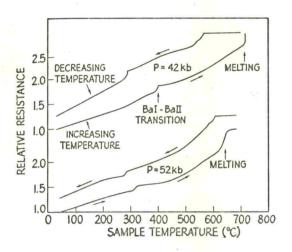


Fig. 2. Resistance vs temperature curves for the rious phases of barium.

citing curves observed at low pressures in the preat work and those obtained at higher pressures 6 ad support to the tentative conclusion that the 1-kb transition at 25 C is indicative of melting. sitive identification of this phase as liquid, wever, can be made only after high pressure

x-ray measurements are carried out. If Ba is liquid above 140 kb at low temperatures, the technological implications would be significant since true hydrostatic measurements would be possible in the very high pressure range at reasonable temperatures.

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## RECT OBSERVATION OF DISAPPEARANCE AND COLLAPSE OF STACKING-FAULT TETRAHEDRA IN GOLD FOILS DURING ION BOMBARDMENT IN THE ELECTRON MICROSCOPE

(low to room temperature; E)

lox and Hirsch found that defects in the form stacking-fault tetrahedra were produced during aching and subsequent aging of gold. Cotterill others2,3 bombarded quenched and aged Au at 20°C with 1.0- and 3.5-MeV alpha particles apon examining their foils in the electron microse after the bombardment found that the tetrahedra collapsed. They suggested that the interstitials fixed during irradiation migrate to the tetrahedra cause them to collapse. To obtain further fation on the mechanism of collapse of the hedra and, hopefully, on the temperature of tion of interstitial atoms, we have been bom-Au foils in the electron microscope with 0 ions emanating from coated emission

L. M. Howe and J. F. McGurn Chalk River Nuclear Laboratories Atomic Energy of Canada Limited Chalk River, Ontario, Canada (Received 17 January 1964)

filaments. In order to study this ion damage at low temperatures as well as at room temperature, a liquid helium cooled finger was constructed for the microscope. A sample temperature below 30°K (but above 15°K) could be attained, as determined by condensing xenon, krypton, argon, or nitrogen onto the cold sample during observation. details of the cold finger including the determination of specimen temperatures and the results obtained during ion bombardment of annealed copper below 30°K are given elsewhere.4,5

Stacking-fault tetrahedra were produced in 99.999% pure Au foil by quenching from 950°C into brine at 0°C and then aging for one hour at 100°C. When a normal emission filament was used in the electron

Present address: Physics Department, The University of Texas, Austin, Texas.

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