

EXPERIMENTAL METHOD

1. Synopsis

Lead crystals, .1" long and 1/8" diameter, plated on one end with radioactive silver, were used in this investigation. The samples were prepared by growing 1 1/2" long by 1/8" diameter single crystals from pure lead. The crystals were grown ten at a time in a graphite mold in an evacuated furnace by the Bridgman method. Without removing the crystals from the mold, a surface perpendicular to the axis of the lead rods was ground smooth. The freshly-ground lead was then cleaned by ion bombardment, and vacuum plated with Ag^{110} . One-tenth inch was then sawed off of the plated end of the crystals.

The plated crystals were mounted inside a specially designed high-pressure sample holder and annealed in silicone oil at various pressures and temperatures.

After the samples had been annealed, they were analyzed by slicing off thin layers parallel to the plated surface with a sliding microtome and counting the activity of these slices with a scintillation counter.

2. Sample Preparation

Lead rod (99.999% pure) obtained from A. D. Mackay, Inc. (New York, New York) was first trimmed on a lathe to remove the oxidized surface layer. The lead was then placed in the reservoir of a