

not be determined by direct experiment. This model assumes that the grain boundary may be considered as a transition region consisting of numerous disordered groups of a few atoms less closely packed than the atoms in a regular crystal lattice. Between these imperfect groups we have regions of good lattice fit. The inter-crystalline slip occurs through the atomic rearrangement by thermal agitation within each disordered group by a shear process involving a few atoms as units of flow. This proposal is especially useful in predicting new experiments for the study of the creep of individual crystals of metals under small stress.

T.S.K.

A Grain Boundary Model and the Mechanism of Viscous Intercrystalline Slip. By T'ing-Sui Kê. *J. App. Phys.* 20: 274, March, 1949.

Magnetic Ion Source

A high intensity ion source is desirable for accelerator work because one may then study reactions with smaller yields than if lower beam currents are used. This is especially important at low energies where the yield of reactions is very small.

An ion source for Van de Graaff or similar particle accelerators has been constructed which produces a more intense beam of protons or deuterons than is usual. The ions are produced by bombarding hydrogen or deuterium with electrons from a filament. A magnetic beam parallel to the electron beam confines the ions and electrons produced to small spiral orbits and thus prevents the beam from spreading. The ions are produced in a region free of electric fields, and those which drift near a hole, opposite the entrance hole for the electron beam, are drawn out by a strong electric field and into the particle accelerator itself. Ion currents of more than five hundred microamperes of protons (separated from other constituents of the beam) have been obtained, as contrasted with about twenty microamperes for more conventional sources.

D.L.D.

A Magnetic Ion Source, by C. Bailey, D. L. Drukey, F. Oppenheimer. *Rev. Sci. Inst.* 20: 188, March, 1949.

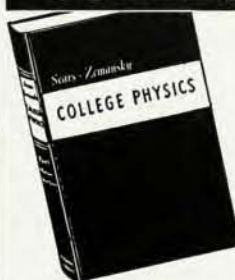
Small Drops

In analyzing the kinetics of transitions between a liquid and its vapor it is important to know how the surface tension of small masses of the liquid depends upon their size and on the curvature of the boundaries separating them from the vapor from which they were formed. Embryos decay unless a critical size, depending upon surface tension, is exceeded.

The Gibbs thermodynamic theory of capillarity relates the surface tension of a spherical drop of liquid in contact with its vapor to the radius of the drop and a quantity called the superficial density, referred to the surface of tension. If the superficial density is positive, surface tension decreases with decreasing droplet size. If negative, the surface tension increases. Since the superficial density is difficult to measure, a theoretical investigation of its sign and magnitude is much to be desired.

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