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Optical Constants of Single Crystal Bismuth

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HALL EFFECT AND SPECIFIC RESISTANCE IN THIN
EVAPORATED FILMS OF FE, CO, NI, PD, AND PT.

H. B. PEACOCK

(ABSTRACT)

Further investigation of the Hall effect and specific resistance in thin films of iron, cobalt, nickel, palladium, and platinum give the following results: (1) the specific resistances of films deposited on a cool surface range from 4 to 30 times the accepted values for the corresponding bulk metals; (2) the Hall coefficients for the paramagnetic metals palladium and platinum are slightly smaller than bulk values; (3) the Hall coefficients for iron, cobalt, and nickel deposited on a cool surface are respectively 1.8 times, 5 times, and 7 times, the bulk values; (4) heating films of iron, cobalt, and nickel during deposition causes both the Hall coefficients and specific resistances to decrease almost to bulk values; (5) saturation of the Hall effect occurs for iron at a slightly lower magnetic field than for bulk values, for cobalt at 12500 as compared with 13500 for bulk, and for nickel at 2500 as compared with 6000 for bulk; and (6) microscopic investigation of nickel and cobalt shows some evidence of crystal structure.

Results 1 and 2 can be explained by granular structure. Result 4 indicates that the granular structure of the ferromagnetic metals can be changed by heating. In results 3 and 5 it should be pointed out that the variations from bulk values are in the same order as the atomic numbers of the metals, which might indicate some fundamental difference in structure of the evaporated films.

STATE UNIVERSITY OF IOWA.

OPTICAL CONSTANTS OF SINGLE CRYSTAL
BISMUTH

L. H. ROWSE

(ABSTRACT)

The index of refraction and extinction index of bismuth for a ray reflected from a natural cleavage surface (perpendicular to main crystallographic axis) are measured by means of a Stokes' analyser. The values so obtained are compared with the values for the polycrystalline metal.

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