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Title : Density Calculations for an Effused Beam of Cadmium from Resonance Line Measurements.



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Abstract : The paper presents a method for calculating the density of atoms in an effused beam of cadmium from absorption measurements on the 3261 A and 2288 A cadmium resonance lines. Equations are derived that relate the density to the integral of the absorption coefficient, and the absorption coefficient to the measured absorption. Equations for the density of effused atoms are also derived from kinetic theory to compare with the density from the absorption data. All calculations are done by a computer, with a complete listing of the program included in the appendix. The average ratio of the density calculated from absorption data to the density calculated from effusion is 1.60 at 3261 A and 1.78 at 2288 A. The discrepancy is attributed mainly to free cadmium in the experimental system, with the recommendation that the cadmium beam be controlled at the effusion cell orifice. (Author)

Descriptors : (*ATOMS, DENSITY), (*CADMIUM, MOLECULAR BEAMS), RESONANCE ABSORPTION, THESES.

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