

1939

Measurement of Young's Modulus with Small Stress

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Recommended Citation

Tyndall, E. P. T. (1939) "Measurement of Young's Modulus with Small Stress," *Proceedings of the Iowa Academy of Science*, 46(1), 271-271.

Available at: <https://scholarworks.uni.edu/pias/vol46/iss1/89>

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values. The M_1 edges occasionally have a small discrepancy while the M_2 and M_3 edges seldom show any. Siegbahn and Phelps have suggested that the final levels in the edge transitions are valence and low lattice levels and that the selection rule $\Delta l = \pm 1$ is usually giving the transition preference. A change in atomic spacing of a metal, such as often results from alloying it, should produce a change in the energies of its lattice levels. The gold M_5 and M_4 edges from gold and from a 50 atomic per cent copper gold alloy were photographed in a vacuum spectrometer. Significant shifts to higher energies in M_5 of 2.5 electron volts and in M_4 of 6.8 volts were found. These results show that the final levels in M absorption transitions are lattice levels, and they give credence to the assumption that there are preferred atomic to lattice level transitions.

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MEASUREMENT OF YOUNG'S MODULUS WITH SMALL STRESS

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A modification of the apparatus previously described by Van Allen has been designed and used for measurements on zinc and lead crystals.

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A DETERMINATION OF THE ADIABATIC ELASTIC CONSTANTS OF QUARTZ

PHILIP J. HART

If the elastic constants of a homogeneous, anisotropic material are known, it is possible to calculate the theoretical frequencies of the different modes of vibration between the faces of an infinite plate of the material. Conversely, knowing the frequencies of sufficient modes of vibration, it is possible to calculate the elastic