Proceedings of the Iowa Academy of Science

Volume 44 | Annual Issue Article 48

1937

The Zeeman Effect on the Hyperfine Structure of Optically Excited Mercury Resonance Radiation

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by molten metals has been extended to include tantalum as a filament material. This report brings the work up to date. It includes the following metals as filament materials: nickel, platinum, molybdenum, tantalum, and tungsten. The following metals were evaporated from the molten state: aluminum, silver, gold, copper, nickel, chromium, and platinum.

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OPTICAL EXCITATION OF MERCURY-HYDRIDE

L. O. OLSEN

A mixture of mercury vapor and water vapor in a resonance tube is illuminated with, (1) a mercury and hydrogen discharge tube; (2) a mercury and helium discharge tube. Photographs of the fluorescent spectra show that some mercury hydride molecules are formed in the resonance tube.

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THE ZEEMAN EFFECT ON THE HYPERFINE STRUCTURE OF OPTICALLY EXCITED MERCURY RESONANCE RADIATION

E. HOBART COLLINS

Optically excited mercury resonance radiation was used as a light source to provide the sharpest possible hyperfine structure lines of Hg. 2537. This light source was placed in magnetic fields varying from zero to 2000 gauss. A lummer plate and a camera with a special quartz lens was used to secure the Zeeman hyperfine structure patterns. The patterns were analyzed by the newly-installed micro photometer of the State University of Iowa. The measurements and theoretical interpretations are given. The experimental work for this paper was performed at Physics Department of the State University of Iowa.

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CURRENT VIEWS WITH REFERENCE TO THE NATURE OF LIQUID STRUCTURE

G. W. STEWART

This is a report of progress in the study of the structure of liquids, analogous to the crystal structure of solids. Prins has given a mathematical treatment wherein the crystal structure is approximated to an expressed degree of probability. Bernal has made this treatment more general. These efforts advance the subject by giving models capable of mathematical description. Experiments in Raman effect continue to show that the intermolecular forces in the liquid are much like those in the crystal solid. The study of glasses shows their crystallite structure and emphasizes the difference between glass and liquid. These results, as others, emphasize the essential correctness of the cybotactic view, which emphasizes the fluctuating character of the structure, the liquid possessing at any instant minute spots approximating crystallites.

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PHYSICAL DEVELOPMENT OF PHOTOGRAPHIC PLATES

GEORGE HIGGINS

Physical development of photographic plates is not as efficient as chemical development. While it produces very fine grain negatives, longer exposure than normal is required and plates must be developed an hour to produce satisfactory printing densities. pH of the developer is important.

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