Oscilloscope Scanning of Visible Spectra

W. E. Deal, William Bradshaw, and F. A. Matsen

Citation: The Journal of Chemical Physics **16**, 638 (1948); doi: 10.1063/1.1746966
View online: http://dx.doi.org/10.1063/1.1746966
View Table of Contents: http://scitation.aip.org/content/aip/journal/jcp/16/6?ver=pdfcov
Published by the AIP Publishing

Erratum: Ultraviolet Absorption Spectrum of Hydrogen Peroxide

[J. Chem. Phys. **16**, 225 (1948)]

R. B. HOLT, C. K. MCLANE, AND O. OLDENBERG
Lyman Physical Laboratory, Harvard University, Cambridge, Massachusetts

THROUGH an error a wrong cut was used for Fig. 1 in this article. The following figure should have appeared in place of the one used.

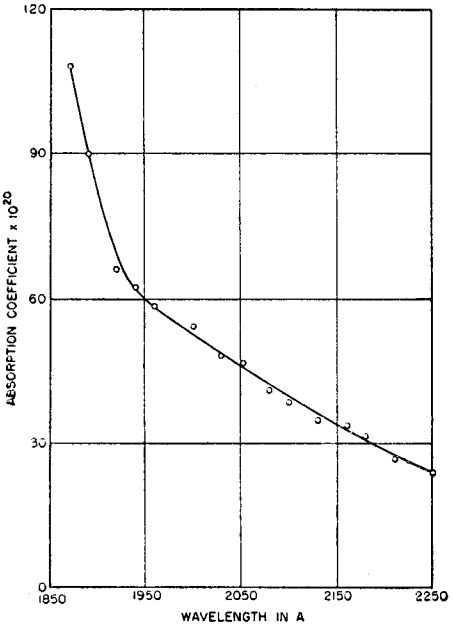


FIG. 1. Absorption coefficient for hydrogen peroxide vapor (average values).

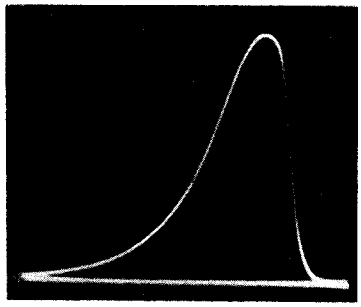
Oscilloscope Scanning of Visible Spectra

W. E. DEAL, WILLIAM BRADSHAW, AND F. A. MATSEN
The University of Texas, Austin, Texas

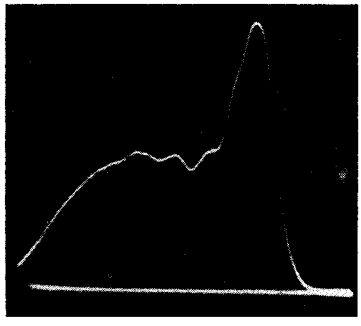
April 23, 1948

AN infra-red spectrograph with cathode-ray presentation has been developed by Daly and Sutherland and King, Temple, and Thompson.[1] On the vertical deflection system of a long-persistence tube was impressed the amplified output from a bolometer past which an infra-red spectrum was swept by means of a fourteen-second period rotation of the prism. A linear horizontal trace was employed.

In this laboratory the same principle has been applied in the visible region to obtain "instantaneous" spectra.[2] A glass prism was rotated at speeds from 1800 to 3600 r.p.m., the spectrum being detected by a photo-multiplier tube. A shutter attached to the prism table interrupts a beam of light producing a trigger pulse for a driven sweep circuit.



1a



1b

FIG. 1. Oscilloscope Trace: a—Emission spectrum of tungsten bulb; b—Dilute potassium permanganate in path. Gain for b twice that for a.

In Fig. 1a is reproduced the emission spectrum of a tungsten bulb; in Fig. 1b a cell containing dilute potassium permanganate solution has been placed in the optical path. These spectra were photographed from a P-11 phosphor tube with $\frac{1}{10}$-second exposure time on Eastman Super XX film. A movie camera will be used to study spectral sequences in rapid chemical reactions. A complete report will appear elsewhere.

Work is in progress extending the technique to the near infra-red region using photo-conductive detectors and to the ultraviolet using quartz optics.

[1] E. B. Baker and C. D. Robb, Rev. Sci. Inst. **14**, 362 (1943). E. F. Daly and G. B. B. M. Sutherland, Proc. Phys. Soc. (London) **59**, 77 (1947). See also J. King, R. B. Temple, and H. W. Thompson, Nature **158**, 196 (1946).

[2] See R. C. Herman and S. Silverman, J. Opt. Soc. Am. **38**, 209 (1948) for a photographic method involving translation of the spectrographic plate.