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Journal of Quantitative Spectroscopy and Radiative Transfer

Volume 25, Issue 4, April 1981, Pages 381-385

Oscillator strengths of ultraviolet V(II) lines (2290–2530 Å) from emission measurements in a stabilized arc

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[https://doi.org/10.1016/0022-4073\(81\)90086-8](https://doi.org/10.1016/0022-4073(81)90086-8)

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Abstract

An argon-vanadium plasma has been produced in a wall-stabilized arc. The metal was introduced into the arc as an oxide powder suspended in flowing argon. Before introduction into the arc channel, the suspension was pulsed towards an auxiliary plasma source. The plasma radiation was photographed in the u.v. spectral region with a 10m concave grating vacuum spectrograph using an Eagle mounting. Relative calibration of the emulsions was carried out by using the intensities in the wings of the 2478 and 1931 Å lines of C(I) emitted by an Ar-CO₂ plasma; the primary standard radiation was provided by the continuum emitted from this plasma, which was produced in a stabilized arc. Plasma diagnostics were performed assuming LTE. Absolute *gf*-values for 33 V(II) lines in the range 2290–2530 Å have been evaluated using a computer program for statistical treatment of the data. Comparisons with theoretical calculations often show discrepancies that are larger than estimated experimental error limit.

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