

Abstract Submitted
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A Survey of Infrared Continuum verses Line Radiation from Metal Halide¹ M. KATO, University of Wisconsin-Madison, M.T. HERD, J.E. LAWLER, University of Wisconsin-Madison — Near-infrared radiation (near-IR) losses from the arc of six commercial Metal Halide High Intensity Discharge (MH-HID) lamps with various power levels and with both Na/Sc and rare earth doses were surveyed in this paper. A radiometrically calibrated Fourier transform infrared spectrometer was used. Lamps with rare earth doses have appreciably better Color Rendering Indices (CRI's) than lamps with Na/Sc doses. The ratios of near-IR continuum emission over near-IR line emission from these six lamps were compared. The near-IR continuum dominates near-IR losses from lamps with rare earth doses and the continuum is significant, but not dominant, from lamps with Na/Sc doses. There was no strong dependence of this ratio on input power or Color Temperature (Tc). Total near-IR losses were estimated using absolutely calibrated, horizontal irradiance measurements. Estimated total near-IR losses were correlated with CRI. The lamps with rare earth doses yield the best CRI's, but have appreciably higher near-IR losses due primarily to continuum processes. One of these rare earth MH-HID lamps was used in a more detailed study of the microscopic physics of the continuum mechanism[M. T. Herd & J. E. Lawler, J. Phys. D 40, 3386 (2007)].

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