

Abstract Submitted
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Determination of gas-phase emitter effect in ac operated ceramic metal halide lamps MICHAEL WESTERMEIER, OLIVER LANGENSCHIEDT, JENS REINELT, JUERGEN MENDEL, PETER AWAKOWICZ, Ruhr-University Bochum, Institute for Electrical Engineering and Plasma Technology — Dy-densities and the corresponding electrode tip temperature have been determined by spatially and temporally resolved spectroscopy at and in front of electrodes operated with an ac-current in metal halide lamps. The lamps, made of transparent YAG arc tubes and containing Hg+NaTlDy iodides, were installed in the Bochum model lamp as an outer sleeve. It allows salt pressure depending measurements of the electrode temperature profiles, yielding a global tip temperature and an electrode loss power, and spectroscopic measurements of absolute line intensities to determine the Dy-densities in front of the electrode. It is found that Dy atoms in the gas phase generate a strong gas-phase emitter effect characterized by a clear reduction of the work function. It reduces the electrode temperature, the input power and influences the type of arc attachment. To distinguish between cathodic and anodic effects, phase resolved measurements of the electrode tip temperature will be presented.

Michael Westermeier
Ruhr-University Bochum, Institute for
Electrical Engineering and Plasma Technology

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