

Abstract Submitted  
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**Net emission coefficients of argon-iron plasmas**<sup>1</sup> MARTIN WENDT, HEINZ SCHÖPP, DIRK UHRLANDT, INP Greifswald, Felix-Hausdorff-Str. 2, 17489 Greifswald, Germany — This work presents net emission coefficients for argon-iron plasmas for temperatures from 3000 to 30000 K and iron fractions from 0 to 100 %. Net emission coefficient avoid the numerical costs of an exact treatment of the radiation transport equation for elements with a multitude of spectral lines, so that the results presented here are useful for the modelling of welding arc. Next to spectral lines the results presented here take into account free-free and bound-free transitions. The broadening of the spectral lines is dominated by quadratic Stark broadening. Their Stark widths are calculated using semiclassical broadening theory. For each species a mean scaling factor for the Stark widths is determined by comparison with published experimental Stark widths measured at several electron densities and temperatures. Additionally, calculated side-on spectral radiances are compared with measurements from a gas metal welding arc. The presented results are in good agreement with previous net emission coefficients for argon-iron plasmas.

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Martin Wendt  
INP Greifswald, Felix-Hausdorff-Str. 2, 17489 Greifswald, Germany

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