Progress Report

ON THE GAS TEMPERATURE DETERMINATION IN Ar PLASMA AT ATMOSPHERIC PRESSURE FROM BROADENINGS OF ATOMIC EMISSION LINES

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A new spectroscopic method (Yubero et al., 2017), for gas temperature determination in argon non-thermal plasmas sustained at atmospheric pressure, will be presented. It is based on the measurements of pairs of argon atomic lines which are selected as convenient ones, namely: Ar I 603.2 nm/Ar I 549.6 nm, Ar I 603.2 nm/Ar I 522.1 nm and Ar I 549.6 nm/Ar I 522.1 nm. The advantage of this method is that for gas temperature determination, there is no need to know the degree of thermodynamic equilibrium existing in the plasma. In order to check it, the obtained values of the gas temperature, have been compared with the rotational temperatures derived from the OH ro-vibrational bands, using the Boltzmann-plot technique and the best fitting to simulated ro-vibrational bands.

References

Yubero, C., Rodero, A., Dimitrijević, M. S., Gamero, A., García, M. C.: 2017, Gas temperature determination in an argon non-thermal plasma at atmospheric pressure from broadening of atomic emission lines, *Spectrochimica Acta B*, **129**, 14-20.