

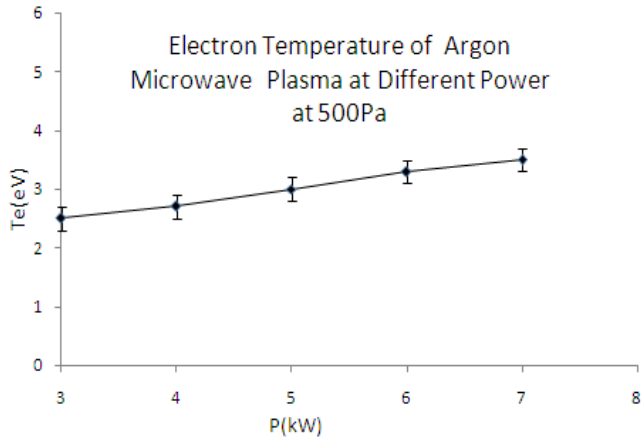
DIAGNOSIS OF MICROWAVE ARGON PLASMA AT LOW PRESSURE*

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Argon plasma is generated with a microwave plasma equipment¹ at 2000 Pa and 500 Pa. We use Mach-Zehnder Interferometry to measure the electron density distribution of the plasma; and use a spectrometer to survey the electron temperature and other components of plasma. From the spectrum we find a considerable constitution of free oxygenic radicals such as free OH radicals, free NO radicals and so on. From Boltzmann fitting curve we calculate that the electron temperature of the argon plasma is about 0.7eV at 2000Pa and about 3.5eV at 500Pa when microwave power is 7kW, and figure out curve of the electron temperature changing with the power supplied at 500Pa. With the Mach-Zehnder interferometry we get the interferograms and work out that the electron density distribution is roughly uniform in the whole plasma as the power ranges from 3kW to 7kW.



1. Q. Zhang, G. X. Zhang, L. M. Wang, et al. "Measurement of the electron density in a microwave plasma torch at atmospheric pressure". *Applied Physics Letters* 95, 201502 (2009)

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