

PLASMA OF NOBLE GASES AND THEIR MIXTURES AT ATMOSPHERIC PRESSURE

María Dolores Calzada Canalejo

*Grupo de Espectroscopía de Plasmas, Edificio Einstein (C-2), planta baja,
Campus de Rabanales, Universidad de Córdoba, 14071 Córdoba, Spain*

E-mail: md.calzada@uco.es

A common characteristic of most technological applications of plasmas today is that the plasmogen gas is made up of a gas mixture. Several applications, such as metal surface nitriding, medical instrument sterilization and chemical analysis have been developed or improved in this way.

Research carried out on these subjects covers the aspect of knowing the processes that take place in the plasmas which depend on the densities of the different plasma particles and their energy values. Because of this it is important to measure the values of plasma parameters (densities and temperatures) in order to comprehend the physical behaviour of plasmas used with the purpose of their practical applications.

Emission spectroscopy techniques are non-invasive and allow us to obtain information about the plasma parameters analyzing the radiation emitted by the discharge. In this way, starting from the intensities and broadenings of the spectral lines, which appear in these spectra, we obtain information regarding the plasma parameters.

Nevertheless, spectroscopic diagnosis methods usually consider the case of single gas discharges, but when more than one kind of gas is present in a discharge the interaction among the different particles can have an important influence over the profiles of the plasma spectral lines. Therefore, research on the application validity of the methods developed for single gas plasmas to gas mixture plasmas is necessary.