

A study of plasma for environmental applications using Thomson Scattering diagnostic

KARIM OUARAS

During the past decades, our environment has been critically polluted owing to the widening of the industrial processes and human actions. The result is the vast presence of chemical pollutants which can induce climate change and health problems. This situation leads to the development of novel waste abatement technologies. Among them, atmospheric non-thermal plasma (NTP) is a suitable technology to ensure pollutant dissociation since plasma chemical processes are quite energy efficient.

Nevertheless, there are still some challenges affiliated to plasma-assisted combustion and pollution control. In the one hand, it is necessary to extend the capability of the application of plasma and the generation of even more suitable plasma. In the other hand, the characterization of fundamental plasma parameters (electron density and temperature) is also a great challenge since pollutant destruction induced by the plasma is strongly correlated to these parameters.

The aim of this project is to determine these plasma parameters in the plasma reactor of the Stanford Plasma Physics Laboratory using a promising technic, the Thomson Scattering. The project encompasses collaboration with French laboratory of the CNRS which using the same type of plasma reactor. The obtained results will be useful for the whole plasma community.