

## Plasma technology to mitigate climate crisis: Usefulness of OES as processes optimization

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Plasma technologies are a promising route in a wide range of applications concerning negative impacts of climate crisis (e.g. stress conditions on seeds inhibiting germination or normal growth of plants, epidemic proliferation) and even, for the conversion of greenhouse gases (GHG) into energetic gases.

In this work, an overview of plasma technologies currently applied to ameliorate our environment would be depicted; followed by projects developed at our Laboratory where optical emission spectroscopy (OES) resulted in an useful tool to better understand and optimize these techniques. Specifically, rotational and electronic temperatures and key chemical species (e.g.  $O^{\bullet}$ ,  $O(^1D)$ ,  $\bullet OH$ ,  $e^-$ ) are here described.

Particularly, four affordable and green plasma applications would be depicted: the use of non-thermal plasma to improve the germination and growth of endangered Mexican maize specie, the deactivation of virus type, the synthesis of carbon nanoparticles with thermal plasmas to construct environmental friendly supercapatteries and, finally, the treatment of toxic gases and the conversion of GHG into syngas.

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