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Instituto de Energías
Renovables

SEMINARIO DEL IER

"PLASMA TREATMENT OF WASTE"

Francesco Giammanco Professor of General Physics at Dpt. of Physics of University of Pisa, Italy, retired since September 2017. He is still leading the group "Collective Phenomena in Plasmas" with which is involved in a plasma experiment held at ENEA-Frascati. At present, he is also visiting Professor at the Institute of Renewable Energies of UNAM, Cuernavaca, Mexico. His fields of interest span from Plasma Physics (diagnostics, theory and experiment), Nonlinear Optics, Laser produced nanoparticles and Plasma diagnostics (e.g. Spectroscopy, interferometry). He has been head of several National and International Projects. Among them, noteworthy, he has been leader of Italian Diagnostic group at the US-based company TriAlphaEnergy (TAE), Foothill Ranch, CA from 2005 to 2016. He is author of about 150 papers in International Journals and Books and referee of International Journals in Optics, Nanoscience and Plasma Physics. h index: 20, hi10: 35 (Google Scholar).

Plasma processing (PPW) of waste of different type is under study since many years as an alternative method to incineration. Unlike conventional methods, PPW presents undoubted advantages such as production of inert material, abatement of pollutants, namely dioxin, and energy recover by production of syngas. PPW occurs at very high temperatures, above 10000 °C, that allows to unbound complex molecules leading to a final gaseous contents of H₂ and CO, then ready for conversion in CH₄. Moreover, ionized material, in particular precious elements, can be recovered by physical method. In this talk, after a general presentation of former activity in plasma physics of the author, we discuss the investigation program we plan to develop in the framework of this collaboration.

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Viernes 1 de febrero de 2019, 12:00 hrs

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