



“Gheorghe Asachi” Technical University of Iasi, Romania



PLASMA CHEMISTRY AND THE ENVIRONMENT

Marian I. Totolin*, Ghiocel E. Ioanid, Iordana Neamtu

“Petru Poni” Institute of Macromolecular Chemistry, 41A Aleea Grigore Ghica Voda, 700487 Iasi, Romania

Abstract

Plasma is often called the fourth state of matter. It is distinct from other lower-energy states of matter, most commonly solid, liquid, and gas, although it is closely related to the gas phase in that it also has no definite form or volume. Plasma technique may use any gas or gas mixture, within equipment limitations. Each gas or mixture of gases produces distinctive plasma, making possible a very diverse range of chemical environments. Besides the recombination mechanisms developed on the surfaces, which confine the plasma, the active species of the discharge interact and continuously tailor the artificially exposed (reactor walls, various substrates, etc.) and self – generated surface layers. The competition between the recombination – deposition processes and the “destructive” interaction of plasma species with the nascent macromolecular structures will control the intensities and the predominance of ablation, surface functionalization and macromolecular film formation reactions. For the conservation of historical heritage items, plasma treatments were applied for cleaning, decontamination and surface treatment of natural polymer supports (film deposition).

Key words: cleaning, cold plasma, decontamination, HF (high frequency), polymerization

* Author to whom all correspondence should be addressed: e-mail: mtotolin@yahoo.com