

CAMT Seminar

“Development of Plasma Sources for Surface Treatment”

Prof. Magdaleno Vasquez Jr

College of Engineering,
University of the Philippines-Diliman, The Philippines

Date: 19 January, 2023 (Thu) 14:00-15:00

Location: Main Conference Room (1st floor), Bldg. A12
Center for Atomic and Molecular Technologies (CAMT)
(A12 棟 1 階会議室)

Abstract

Plasma treatment for surface modification has been extensively used as a result of its robustness, speed, and generally environmentally benign processes. These processes are carried out under different operating conditions that ranged from atmospheric pressure to high vacuum. Glow discharges, dielectric barrier discharges, and ion beams have been exploited to tailor the surface properties of materials for target applications and specific responses. Custom-built systems allowed for a further understanding of how plasma interacts with a surface. In our work, plasma-based processes provided alternative solutions to the modification and improvement of surfaces of locally available materials. These specially made plasma systems are used to modify materials for different applications. These include the deposition of decorative coatings for the furniture and creative industries. Use of plasma-modified natural fibers for cement reinforcement. Treatment of zeolitic materials to enhance the adsorption capacity. Fabrication of nanostructured plasmonic catalytic materials via plasma-induced reduction for wastewater treatment applications. Design of low-cost deposition systems. Development of low-energy ion source systems for surface modification and thin film growth. Optical and electrical characterizations of the plasma were used to correlate these process parameters with the resulting surface properties. Similarly, these results were also used to tune gas discharges for a targeted surface response, as well as to establish the repeatability and scalability of the process.

(Host: Satoshi Hamaguchi Ext:7913)