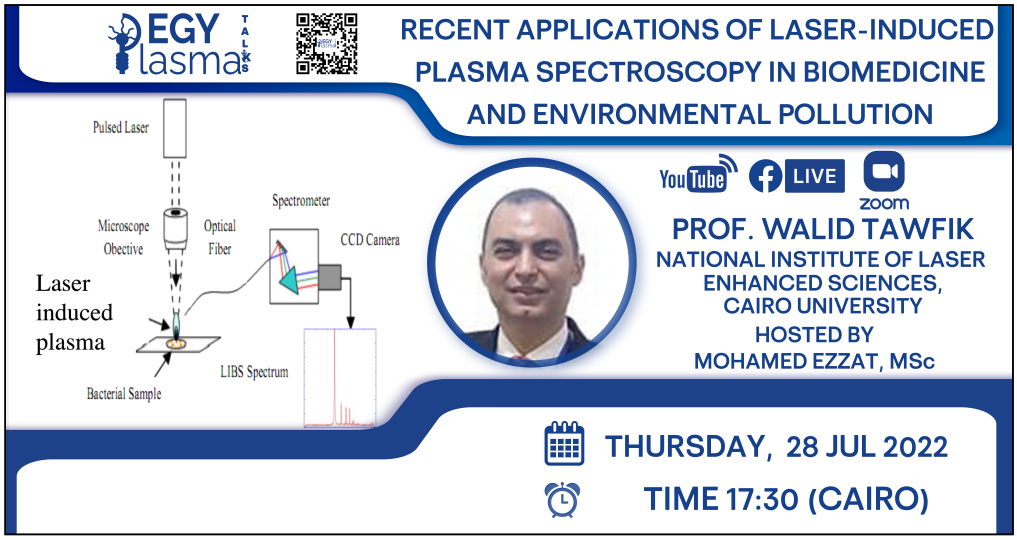

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Title: Recent Applications of Laser-induced Plasma Spectroscopy in Biomedicine and Environmental Pollution

Speaker: Prof. Walid Tawfik (National Institute of Laser Enhanced Sciences,Cairo University)

When: 2022-07-28 17:30:00 - **Hosted by**: Mohamed Ezzat, MSc

Abstract: The laser-induced plasma spectroscopy (LIPS) technique represents one of the most advanced spectroscopical methods in many biomedicine and environmental applications. LIPS is a rapid laser pulse that produces a micro-plasma on the sample surface for chemical analysis. It has been applied to investigate two different types of bacteria, Escherichia coli (B1) and Micrococcus luteus (B2) deposited on glass slides using laser-induced plasma. Ca, Mg, Na, K, P, S, Cl, Fe, Al, Mn, Cu, C, H, and CN-band appeared in bacterial samples in the air. The results showed that the LIPS technique can identify and discriminate against different types of bacteria. On the other hand, LIPS has been applied in assessing the environmental impact of the polluted agricultural soils along the North Delta of Egypt. Analyses of lead, Nickel, and Copper in the collected agricultural soil samples were achieved using laser-ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) and inductively-coupled-plasma optical-emission spectroscopy (ICP-OES). By examining reference materials and comparing observed results to published concentration levels, the accuracy of the analyses was verified. The observed heavy element concentrations were higher than the Canadian soil quality requirements, indicating that the investigated agricultural soils were contaminated with these elements.

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