East Carolina University®
Departments of Physics

Physics Colloquium

Friday, March 21st, Room N109, Howell Science Complex
3:15 p.m. (Refreshments at 3:00 p.m.)

Professor Sylwia Ptasinska
University of Notre Dame

Electrons at the Core: From Quantum Physics to Industrial and Medical Innovations

The Notre Dame Radiation Laboratory has a rich history, tracing back to the Manhattan Project, with a mission to explore the fundamental effects of ionizing radiation across a wide range of scientific fields. When ionizing radiation interacts with matter, it generates vast quantities of non-thermal secondary electrons, which play key roles in various elementary collisional processes. These processes drive the creation of energetic and reactive species with significant implications. This talk will focus on several quantum processes, with particular emphasis on dissociative electron attachment and the recent experimental advancements in our lab, which aim to provide a more complete understanding of this dissociation phenomenon. Additionally, free electrons and unpaired radicals, both integral components of atmospheric pressure plasmas, are emerging as powerful radiation sources in industrial and biomedical applications. At our laboratory, we use DNA and biological cells as molecular probes to study the energetics and chemistry of these plasmas, employing machine learning techniques to enhance the understanding of electron-induced processes and optimize plasma efficiency across diverse applications.

WebEx Link:
https://ecu.webex.com/ecu/j.php?MTID=m597b61dec85df5a0e1e21138fe56cd86 Individuals with disabilities who require accommodations in order to participate in any event at ECU are encouraged to contact the Department for Disability Support Services at 252-328-4802 (Voice/TDD) forty-eight hours prior to the start of any program. For information regarding the Colloquium, please call 252-328-6739.