



# New Mexico State University

## Chemical Engineering Department

COE Distinguished Lecture & Shires Graduate Seminar Series

### **New and Emerging Technologies for Personal Protection Against Droplets and Aerosols**

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**George W. Lucky Professor of Chemical Engineering**



#### **Abstract:**

Since the outbreak of SARS-CoV-2, global mitigation strategies have included the use of face coverings to protect against airborne transmission of the disease. Besides using face coverings for infectious disease prevention, personal protection against aerosols generated by environmental causes has generated much interest, especially in urban areas that experience unhealthy levels of PM<sub>2.5</sub> particulates. Given the need for personal protection against breathing potentially hazardous airborne particles, the world still heavily relies on passive filtration as the sole means for aerosol mitigation. While advances in filter technology and manufacturing have improved personal protection using face coverings, there remains a need for new technologies that can effectively protect against sub-micrometer aerosols while allowing for ease of wearing and natural human communication.

This talk will review the challenges of mitigating airborne contaminants with particular emphasis on technologies other than filtration. Of specific interest is in bridging specific needs to mitigate sub-micrometer aerosols using electrostatic mobility generated via diffusion charging with ions. Practical aspects of bioaerosol protection, with emphasis on SARS-CoV-2 transmissibility will be explored to discuss a new PPE device under development with a team of students and collaborators at NMSU and an industry partner. Discussion of future directions in the fabrication and testing of prototypes will help illustrate how a scientific understanding of aerosol behavior can be translated into a potentially useful technology.

#### **Biography**

Antonio (“Tony”) García is the Associate Dean of Academics for the College of Engineering at New Mexico State University and brings more than 35 years of experience in academia and industry. He holds the position of George W. Lucky Professor in Chemical Engineering due to his expertise in bioprocessing and biomedical devices. Dr. García emphasizes to students that at NMSU engineering, we are all involved in DIL - Discovery, Innovation, and Learning. As a designer, inventor, and researcher, he has developed several diagnostic and drug delivery technologies in conjunction with an international team whose mission is to promote the use of personalized care technology to improve global health. As a learner, he works with colleagues in education, social sciences, and the sciences to become a more effective leader, educator, and researcher/innovator.

**Please join the Zoom Meeting, Friday, September 24<sup>th</sup>, 2021 at 1:30pm**

Join URL: <https://nmsu.zoom.us/j/92612801911>