CONCURRENT SESSION 3 – BIOLOGICAL AGENT SAMPLING & ANALYSIS METHODS

Human Safe, Near-Field Infection Protection (NIP) for Continuous Pathogen Inactivation in Air and On Surfaces

Ernest R. Blatchley III | *XCMR Inc*

The COVID-19 pandemic caused by SARS-CoV-2 has exposed weaknesses in society's ability to rapidly respond to a global public health crisis. SARS-CoV-2 and its variants are highly contagious and can cause mild to extremely severe disease and death. It is believed that the main route for transmission is aerosol droplets naturally discharged from an infected person. Experts now believe SARS CoV-2 will become endemic in humans and animals and continue causing disease each year. XCMR is developing breakthrough respiratory protection from infectious diseases by commercializing a new generation of devices for safe, continuous use utilizing Far UV-C radiation (222 nm). This shorter wavelength offers effective microbial inactivation typically associated with conventional germicidal UVC lamps (254 nm) but without the corresponding human health hazards since it does not penetrate the human skin or outer tear layers of the eye. While some companies are using UV-C to treat indoor environments, none are focused on protection devices for an individual's personal workspace. Expected uses of XCMR's Near-field Infection Protection (NIP) devices include biosafety protection during interpersonal interactions in a variety of stationary settings found generally in offices, schools, healthcare, hospitality, retail, transportation and many others. Biosafety tools, specifically NIP devices, are expected to greatly reduce PPE environmental waste (single-use masks) and lower incidence and prevalence of respiratory diseases (e.g., seasonal flu, RSV, hMPV). These tools have the potential to become universal safety devices akin to seat belts and complement more traditional medical countermeasures (i.e., antibiotics and vaccines) in a far more capital and time efficient manner. XCMR has assembled a highly experienced team of experts to incorporate this novel technology into a versatile desktop device for personal protection (e.g., inactivation of microbes present on surfaces and in air surrounding the face and eyes) of those individuals within the controlled irradiation zone created and defined by the placement of the NIP unit. Currently, XCMR is using existing commercial 222 nm excimer sources, to design, model, and test prototype devices that integrate various form-factors of geometry and exposure to achieve rapid microbial inactivation during respiration within the confined near-field spatial environment surrounding an individual. Surrogate microorganisms (e.g., bacteriophage) for SARS CoV2 will be employed to assess the effectiveness of the configurations in inactivation of the microbes. With this backdrop, XCMR proposes to discuss advancements in decontamination methodologies and processes, using software models and simulations that can inform the future direction of innovation in decontamination.