

Fluorescence Technology Company Joins Incubators at bwtech@UMBC Research and Technology Park

Plasmonix, Inc. Builds Range of Health, Safety and Energy-Efficiency Products Based on UMBC Professor's Research

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Current tests to identify salmonella — the dangerous pathogen behind the recent recall of more than 500 million eggs — typically take 48 hours as researchers wait for bacteria to grow inside Petri dishes.

A process developed at UMBC's Institute of Fluorescence (IoF) and licensed to the biotech startup Plasmonix, Inc. could cut that time to seconds, enabling a test that would reveal the presence of salmonella with a telltale luminescent glow.

Other IoF innovations that have been licensed to Plasmonix could have impacts in areas ranging from public safety to energy efficiency. IoF director Chris Geddes, a UMBC chemistry professor and chief scientific officer for Plasmonix, has spearheaded the development of tests that can be used to quickly detect biohazards such as anthrax, STDs such as chlamydia, and cardiac markers that indicate a patient has had a heart attack.

The IoF is also developing materials that glow for extended periods, possibly allowing them to be used as light sources inside buildings, cutting energy use by reemitting energy stored during the day.

Plasmonix, which is already making products for life science research and manufacturing that use Geddes' patented Metal-Enhanced Fluorescence (MEF) technology, will now try to expand its range of offerings as an incubator company at the bwtech@UMBC Research and Technology Park.

As a participant in both the Life Science and Technology Incubator and the Maryland Clean Energy Technology Incubator (CETI), Plasmonix plans to introduce many new products, including tests for biohazard and pathogen detection, devices for medical diagnostics and new platforms for digital fluorescence readout. The company is also exploring commercial possibilities tied to energy efficient plastic materials that could provide light without the environmental costs associated with external electric power.

Plasmonix is seeking partners for applications in other consumer and industrial areas. MEF technology could broaden the range of pigments usable in cosmetics by increasing their radiance, allowing for the safe use of compounds that are dangerous in high concentrations. Materials using MEF technology could be used in apparel, while fluorescent paints could have a range of uses, possibly becoming a safety feature on children's bicycles.

"While our current products indirectly benefit patients by facilitating life science research and manufacturing, our next wave of applications in detection and diagnostics will directly make people safer and healthier," said William Gust, president and CEO of Plasmonix. "We are excited to have access to the resources of the bwtech@UMBC Research and Technology Park to help us grow Plasmonix."

Geddes, who has a doctorate in physical chemistry, has been awarded dozens of patents for his pioneering work in fluorescence. Plasmonix has licensed 22 separate discoveries — representing about 60 international patents — in the area of MEF, a technology that dramatically increases the detectability of the fluorescing material.

MEF technology increases the speed and sensitivity for a variety of tests. It can be used, for instance to detect cardiac markers released during a heart attack in 20 seconds, opening up the possibility that such tests could be performed during an ambulance ride. It can also be used to rapidly detect STDs, biohazards and pathogens, and it can be applied to point-of-care medical diagnostics.

"MEF is a paradigm shift in the way we think about and use fluorescence spectroscopy today," Geddes said. "Given the dominance of fluorescence as a tool in the life sciences, I am excited that Plasmonix is well positioned to unleash the next generation of fluorescence-based products."

Plasmonix licensed the technology in 2009 while the IoF was based at the former University of Maryland Biotechnology Institute (UMBI). The IoF joined UMBC earlier this year in a reorganization that saw former UMBI centers realigned with other institutions in the University System of Maryland.

Fifteen growing companies in bwtech@UMBC's Life Science and Technology Incubator are now using the incubator's resources and support structure to nurture and develop promising business ideas. As a participant in CETI, Plasmonix also joins an expanding cluster of businesses taking strides in green technology.

"Plasmonix has already shown an ability to take the exciting potential of metal-enhanced fluorescence and incorporate it into innovative products," said Ellen Hemmerly, executive director of the bwtech@UMBC Research and Technology Park. "We are thrilled to work with them as they develop their business and find broader markets for their products."