

Selenium, Ltd. Awarded SBIR Grant by the National Science Foundation to Develop Anti-Biofouling Spacers

The six-month, \$149,537 grant supports the company's novel antimicrobial technology to develop a safe and effective way to reduce bacterial growth in water filtration systems.

Austin, TX – November 28, 2011 – The National Science Foundation has issued a six-month \$149,537 grant to biopharmaceutical company Selenium, Ltd. to support the design and manufacture of a selenium based, biocomposite spacer to be used in reverse osmosis (RO) membrane modules in water filtration systems. The company's technology enables an organo-selenium compound to be integrated into the polymer of a spacer at the time of manufacture, thus creating a selenium modified product with antimicrobial properties throughout.

Organo-selenium compounds have been shown to inhibit biofilm formation through the catalytic generation of superoxide radicals, which target bacterial cells without leaching into the surrounding water. The superoxide radicals also destroy micropollutants, providing both passive and constant protection from bacterial attachment.

As water demands increase, and potable water sources decrease, finding more cost effective solutions for water conservation, desalination, and reclamation becomes vital. Currently, much of the energy, chemical and labor costs associated with water filtration are required to address biofilm formation. "Over time, bacteria build up in membrane modules which can inhibit filtration performance," said Kris Looney, President of Selenium, Ltd. "Operators frequently react by increasing water pressure to force the water through. This greater use of energy, along with the need for more frequent cleaning or filter replacement, increases the cost of the filtration process. Selenium's new membrane module spacers will be formulated with our antimicrobial Seldox™ technology, rendering them inhospitable to the formation of bacteria. This will improve energy efficiency and extend the life and functionality of the membrane, thus saving companies time and money."

According to Rob Hanes, Principal Investigator and Selenium's Director of Research, the innovation of incorporating RO membrane module material with antimicrobial properties will revolutionize the high pressure water filtration industry. "Prevention of biofouling while degrading micropollutants is a significant advancement in the filtration process which will not only positively impact the water and wastewater fields, but also other industries such as food, healthcare, and electronics, that employ membrane filtration techniques."

These studies will be carried out in collaboration with Dr. Audra Morse of the Department of Civil and Environmental Engineering at the Texas Tech University School of Engineering.

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About Selenium, Ltd.

Selenium, Ltd. is a biopharmaceutical company specializing in the prevention of bacterial biofilm formation using molecular coatings of redox active selenium for medical, dental, ophthalmic and industrial applications. Seldox™ is made using technology developed by Dr. Ted Reid and Dr. Julian Spallholz, Co-Chief Scientists of Selenium and professors within the Texas Tech University System. Selenium Ltd.'s proprietary chemistry is a "green technology." The technology is able to inhibit microbial growth on surfaces through a natural, safe catalytic reaction that does not leach chemicals or toxins into the surrounding environment. Selenium, Ltd. is an Emergent Technologies Inc. (ETI) portfolio company, and ETI provides all management services. For more information, visit the company website www.selenbio.com.

About Emergent Technologies, Inc.

Emergent Technologies, Inc. (ETI) is a life sciences technology investment and management company which provides early stage funding and development for scientific discoveries originating at universities and research institutions. The Company creates value by transforming scientific breakthroughs into technology platforms with multiple applications. ETI's unique innovation process enables the Company to select promising scientific discoveries for development, maximize the value of intellectual property and manage both cost and risk associated with the commercial development of early stage technologies. ETI is dedicated to turning research into revenue and, in the process, introducing compelling solutions to meet important market needs. For more information, visit the company website www.etibio.com.

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