



Biocides for Destroying Harmful Bacteria and Microorganisms

The University of Florida is seeking a company to commercialize new biocides for destroying harmful microorganisms. These biocides are effective antimicrobial decontaminants for destroying harmful microorganisms such as E. coli and anthrax spores. In addition, they are effective antifouling agents for preventing the costly buildup of bacteria on underwater surfaces such as boats. Current antimicrobial and antifouling products are often ineffective and frequently are very harmful to the environment, to the extent that many have been banned in parts of the world. Researchers at the University of Florida, however, have developed novel biocides that are effective, low-cost, environmentally safe alternatives.

Applications

Elimination of microorganisms in a wide variety of applications, such as:

- ◆ Antimicrobial materials and surfaces, including antiseptics and disinfectants
- ◆ Marine antifouling surfaces, including paint and other coatings
- ◆ Fragrance antimicrobial agents that can be used as a cleaner for the interior of motor vehicles, bathrooms, and places of business including restaurants

Advantages

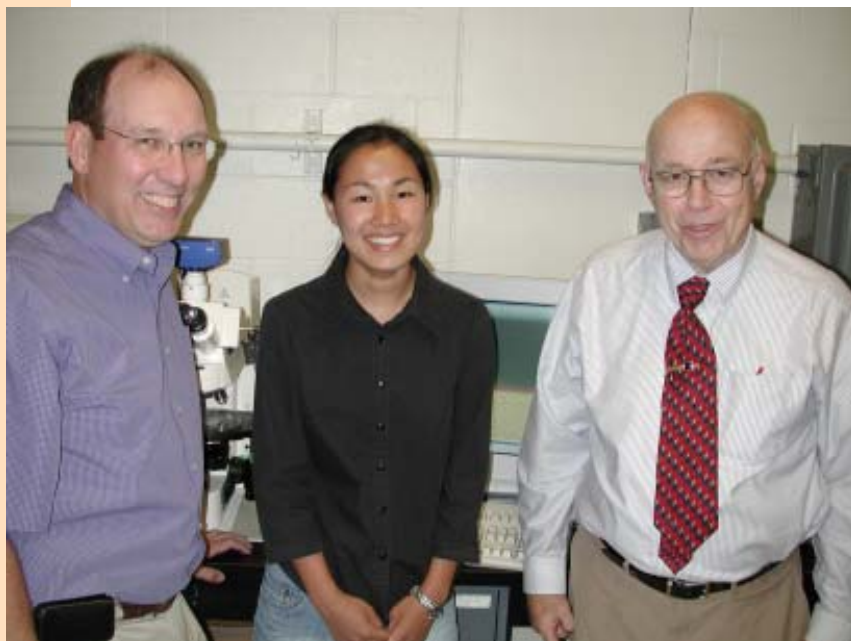
- ◆ Highly effective against a wide range of microorganisms, ensuring broad market potential
- ◆ Relatively inexpensive to produce and easy to use, maximizing user acceptance
- ◆ Create no adverse effects for the atmosphere or the aquatic ecosystem, offering an environmentally friendly alternative to harmful chemical products

The Technology

Researchers at the University of Florida have developed novel biocides that are useful as marine antifouling agents and antimicrobial decontaminants. Current antifouling and antimicrobial products are frequently very harmful to the environment, and many have been banned in parts of the world. Moreover, they are ineffective against many common types of microorganisms. The new UF-developed biocides consist of limited water-soluble organosilicon compounds based on low molecular weight silanol-terminated silanes and siloxanes. They are effective against nearly all types of microorganisms. In addition, because of their transitory nature, these new biocides are readily degraded by natural processes into environmentally inert products, and do not create any adverse effects for the atmosphere or the aquatic ecosystem.

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The Inventors



Yun Mi Kim (center) is a graduate research assistant completing her Ph.D with a specialty in Polymers and Biomaterials at the University of Florida College of Engineering, Department of Materials Science and Engineering. Her undergraduate degree in Chemical Engineering is from Dankook University. She worked for four years as a researcher in the R&D department at Kukdo Chemical Co., Ltd. in Seoul, South Korea before coming to the University of Florida.

Dr. Ronald H. Baney (at right in photo) is a research scientist at the University of Florida College of Engineering, Department of Materials Science and Engineering. He earned his Ph.D in Inorganic Chemistry from the University of Wisconsin in 1960. Dr. Baney has worked extensively with Dow Corning, and served as an honored visiting industrial scientist at Nagoya University (Japan). His research interests include the chemistry of silsesquioxanes and other silicone materials and chitosan-based materials as well as precursors to ceramics and nuclear materials.

Dr. Anthony B. Brennan (at left in photo) is a Professor at the University of Florida College of Engineering, Department of Materials Science and Engineering, and serves as the graduate coordinator for Biomedical Engineering. He earned his Ph.D in Materials Engineering Science from Virginia Polytechnic Institute and State University in 1990. Before joining the University of Florida faculty, Dr. Brennan worked with Coors Biomedical Company. His research interests include engineered and bioactive surfaces, interfaces in composite materials, and inorganic/organic hybrid materials.

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