UNIVERSITY OF FLORIDA *seeks partner to license*

A Novel Coating to Prevent Marine Organisms from Adhering to Underwater Surfaces

The University of Florida is actively seeking companies interested in commercializing a novel surface coating to prevent barnacles and other marine organisms from adhering to watercraft and underwater structures. Bio-film formation and accumulation adversely impact on U.S. Naval, commercial marine, and public utility operations. Current options for addressing this problem – such as anti-fouling and foul release paints – are detrimental to the marine environment due to long-term accumulation and toxicity, generating worldwide bans on such products. Thus there is immediate market demand for an effective, non-toxic anti-fouling method. Researchers at the University of Florida have developed an innovative material that meets this need and can be dynamically modulated to provide a non-toxic, durable anti-fouling and foul-release surface.

Applications

- Non-toxic anti-fouling/foul-release coatings and surfaces with tunable properties for marine environments
- Potential foul-resistant coatings for biomedical applications
- Directed cell growth coating
- Controlled biorelease/bioadsorption, sensors

Advantages

- Self-cleaning surface reduces fuel consumption by eliminating drag caused by barnacles and other deposits on water vessels
- Prevents accumulation of barnacles and other marine organisms on watercraft, enabling greater travel speed
- Durable, low-cost surfaces for bio-film inhibition/control reduce maintenance costs for marine operators
- Non-toxic, providing an environmentally safe alternative to current marine coating products
- Dynamically tunable surface properties enable customization to a variety of applications

The Technology

Production of these novel materials involves incorporation of electroactive polymers into either thermoplastic or thermoset engineering polymer systems. The resulting composite has electrically controllable surface and bulk properties. Properties of interest include surface energy, surface topography and surface modulus. Each is dynamically tunable, which enables one to match the properties to the specific application. This in turn creates multiple design opportunities for applications including antifouling surfaces/coatings, dynamic electrowetting applications, dynamic adhesives and numerous biomedical applications.

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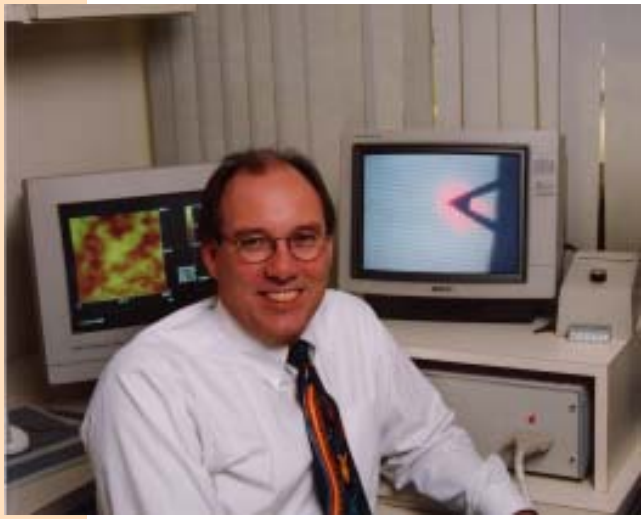
The Inventors



Dr. Anthony Brennan (pictured) received his Ph.D. in Materials Engineering Science from Virginia Polytechnic Institute and State University. He previously managed Coors Biomedical Company which provided research and manufacturing in bioceramics for Johnson & Johnson. Professor Brennan's research program at the University of Florida is focused on biomedical materials with special emphasis on biomedical composites and their interfacial behavior with respect to implantation. Currently, his research group has earned 12 Ph.D and 26 M.S. degrees, authored or co-authored more than 100 publications, 27 invention disclosures and 7 patents. As Associate Director of the Center for Macromolecular Science and Engineering, Professor Brennan has initiated and participated in numerous interdisciplinary research programs within the Colleges of Engineering, Liberal Arts and Sciences and Dentistry. He currently serves as reviewer of numerous publications and serves as a consultant to the medical device industry.

Dr. Clayton Bohn earned his Ph.D in Materials Science and Engineering at the University of Florida with a specialization in polymers. His research interests include electroactive polymeric materials and devices (smart structures and materials) and polymer blends and blend compatiblization via reactive processing.

Ronald Baney, Associate Engineer at the University of Florida Department of Materials Science and Engineering, joined Dow Corning in 1959 and worked in various positions on the research of silicon-containing materials. For most of Dr. Baney's career (1959-1996), he focused on venture activities for Dow Corning, including starting a major ceramic effort and investigations into dielectric materials. As assistant research director at the Japan Research Center, Dow Corning Asia, he initiated a new research thrust into network silicone materials and held the title of global expertise center leader of materials. Dr. Baney was selected for the first Dow Corning industrial sabbatical leave at Cambridge University with professor E. Ebsworth in 1965-6 and at Nagoya University with professor S. Hirano as an honored visiting industrial scientist in 1985-6. In addition to his formidable industrial career, Dr. Baney has authored publications, 4 book chapters (with 2 more in press), and co-edited one book. He holds 40 patents.

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