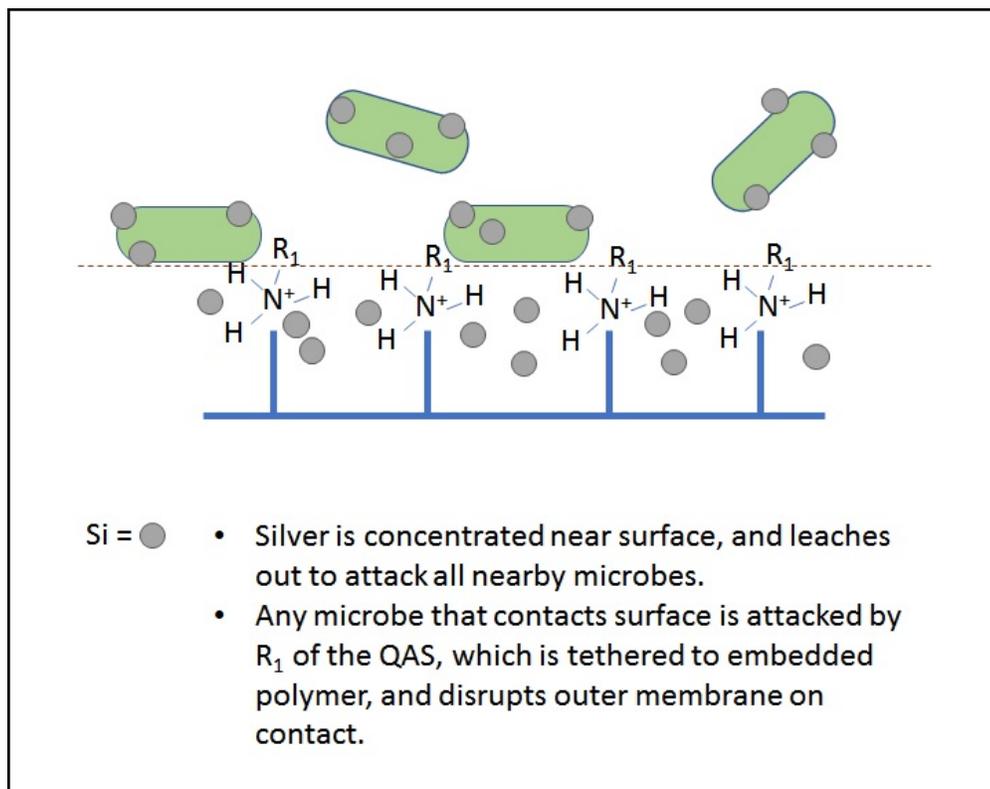


Anti-Microbial Coatings for Medical and Underwater Biofouling Applications (RFT-260)

Invention Summary

Scientists at North Dakota State University have developed a method to confer dual-action and broad-spectrum (gram +, gram -, and yeast) anti-microbial properties into polymers and coatings. The anti-microbial components are quaternary ammonium salts (QAS) and silver. The QAS component is attached to polysiloxane backbone - it may be strongly attached to provide a contact-active anti-microbial, or may be gradually released and leachable. Silver may also be integrated, and the NDSU technology enables silver to be efficiently incorporated just into the outer portion of a surface by dipping into an appropriate silver solution. This means the silver need not be included throughout a polymer or coating layer, but instead can be positioned right at the surface where essentially all the silver is available, and provides a rapid anti-microbial effect once the surface is hydrated. The resulting materials include both a rapidly acting soluble anti-microbial component, and a longer lasting contact-active component to kill microbes that make direct contact with the material.



Benefits

- Confer anti-microbial effect to a diverse array of polymers and coatings, ranging from medical devices to underwater instruments
- Broad efficacy against gram + gram - bacteria, and yeast
- Tethered QAS disrupts outer membranes, meaning the anti-microbial surface can kill microbes on contact, making attachment to surfaces (and eventual biofilm formation) less likely/rapid
- Silver can be added in a way that it is embedded, yet remains close to the surface and highly available to provide an immediate anti-microbial flush when hydrated

Technology

The technology includes a polysiloxane backbone that enables versatile attachment of QAS with multiple options for salts (e.g. bromides, chlorides, and iodides), as well as a unique approach to incorporate silver so as to maximize its availability.

Patents

This technology is patented with fully preserved US patent rights (issued US patent 8,709,394) and is available for licensing/partnering opportunities.

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