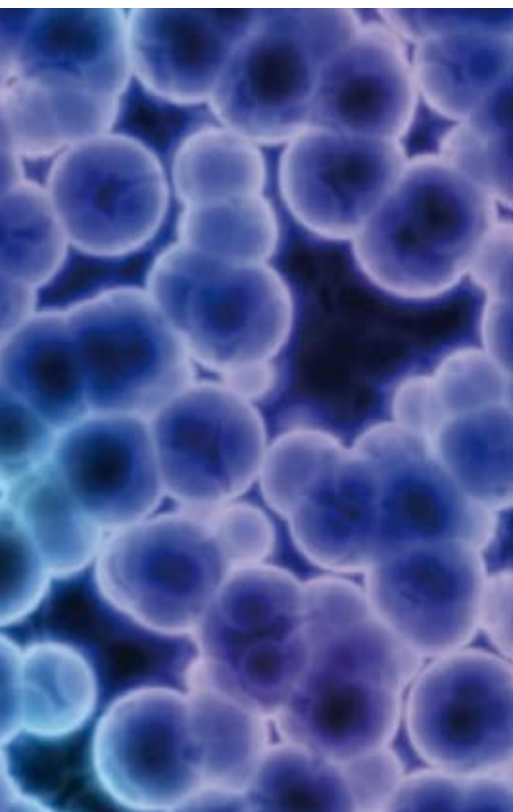


Nanoengineered Antimicrobial Surfaces



The commercialisation company
of the University of South Australia

Researchers at The University of South Australia's Ian Wark Research Institute and the Mawson Institute have developed an ultra-thin plasma film technology containing engineered nanocavities. These nanocavities can be loaded with silver nanoparticles enabling the creation of ultra-thin antimicrobial coatings that can be applied to a huge range of materials and surfaces.



Technology Overview

Microbial infection or contamination remains a significant cause of illness and/or spoilage in medical, food processing, pharmaceutical processing and environmental settings. Additionally most surgical intervention carries some risk of wound infection such as via microbial attachment to the surface of medical implants, devices or dressings.

Researchers from the Ian Wark Research Institute and the Mawson Institute within the University of South Australia have developed an ultra-thin film with a porous polymer matrix of nanocavities that can be loaded with inorganic nanoparticles, such as silver to create an effective antimicrobial surface coating. In contrast to other silver coating technologies, this approach produces polymer films with smooth and biocompatible surfaces; the incorporated silver nanoparticles are extremely small (less than 10nm) and do not protrude, nor do they directly contact the biological environment.

Whilst the technology is at an early stage, it demonstrably shows resistance to bacteria adhesion, colonisation and biofilm formation. In-vitro lab studies are underway and an opportunity exists to become involved in the ongoing development of the technology as it moves closer to the market

Benefits

The technology has a number of unique advantages:

- Ultra-thin films (< 100nm) can be created that don't alter a material's surface morphology

- The films can be applied to the surface of practically any kind of substrate without pre-modification
- The controlled release of silver nanoparticles can be adjusted to occur over a specific number of days
- The process allows full control over the amount of loaded silver nanoparticles
- Application process is both fast and simple
- No solvents are used, making the process safe and environmentally sound

Application

The technology is ideally suited to applications where resistance to bacterial absorption, adhesion and colonisation is necessary to prevent infection or contamination and spoilage of food.

Candidates for this ultra-thin antimicrobial coating include:

- Biomedical devices from wound dressings and catheters, to medical implants such as stents and pacemakers
- Food packaging, particularly meat and fish based products, to help reduce the opportunity for spoilage via contamination of the packaged food

Investment Opportunities

ITEK would welcome the opportunity to discuss how this technology can be exploited by companies looking to be leaders in this field. A range of intellectual property and commercialisation pathways are possible given the current phase of the technologies development.

IP Position

A patent application has been filed covering the specific technology process and approach.

Detailed patent searching suggests that the technology improves upon other approaches to the creation of antimicrobial films.

The Group

Professor Hans Griesser
Ian Wark Research Institute

Dr Krasimir Vasilev
The Mawson Institute

ITEK Pty Ltd

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- Commercialising university research and technology.
- Management of businesses and royalty bearing licences owned by the university.

ITEK's strategy is to create long-term value through the licensing of intellectual property (IP) and the creation of spin-off companies from research conducted at the University.

Contact

John Haskey
Commercialisation Manager
ITEK Pty Ltd

Postal Address
PO Box 546
Salisbury South SA 5106

T + 61 8 8302 5300
F + 61 8 8302 5301
E info@itek.com.au
W www.itek.com.au



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