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Reactive Surface Treatment Technology

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Company Overview

- International company based in Perth, Western Australia and Greer, South Carolina
- Listed on the ASX (ASX: AJX), US (OTC QX) (AXXIY) & Frankfurt stock exchange (E7T.F) .
- **Reactive Surface Treatment (“RST”)**, *a unique patented award winning technology that can change the surface properties and performance of many every day materials.*
- Alexium was established to exploit technology supported by a strategic commercial and technology relationship with the US Department of Defense (“DoD”)

Board & Management



Gavin Rezos – Executive Director and Chairman

- Extensive international investment banking experience
- Held CEO positions in companies in Australia, the UK, US and Singapore
- Non Executive Director of Iluka Resources



Halis Alkis – Chief Executive Officer

- 35 years experience in textile and manufacturing
- 20 years experience in CEO roles and business roles



Stefan Susta – Executive Director

- Over 10 years experience working with US Department of Defence on technology insertion, technology transfer and commercialisation



Craig Smith Gander – Non Executive Director

- Graduate Royal Military College Duntroon, ten years military service
- Owner of Kwik Transport and Crane Hire



Nick Clark – Chief Financial Officer / Company Secretary

- 15 years management experience in the commercial, minerals and petroleum sector
- Commercial specialist in risk mitigation, contract and tender management, strategic management



John Almond – Business Development Director & Manager Europe

- Previous investment management and advisory roles in finance sector
- Experience in identifying and funding emerging companies and technologies

Alexium “World’s Best Technology 2009”*



Invented & tested by DoD

Investment of > \$30 million by DoD

Developed to change the surface properties of textile materials to give them new functions

Initial application to treat standard textiles to provide wearer protection against chemical and biological threats and infection control

Can be applied on almost any surface: woven and non-woven textiles, glass, plastic, etc.

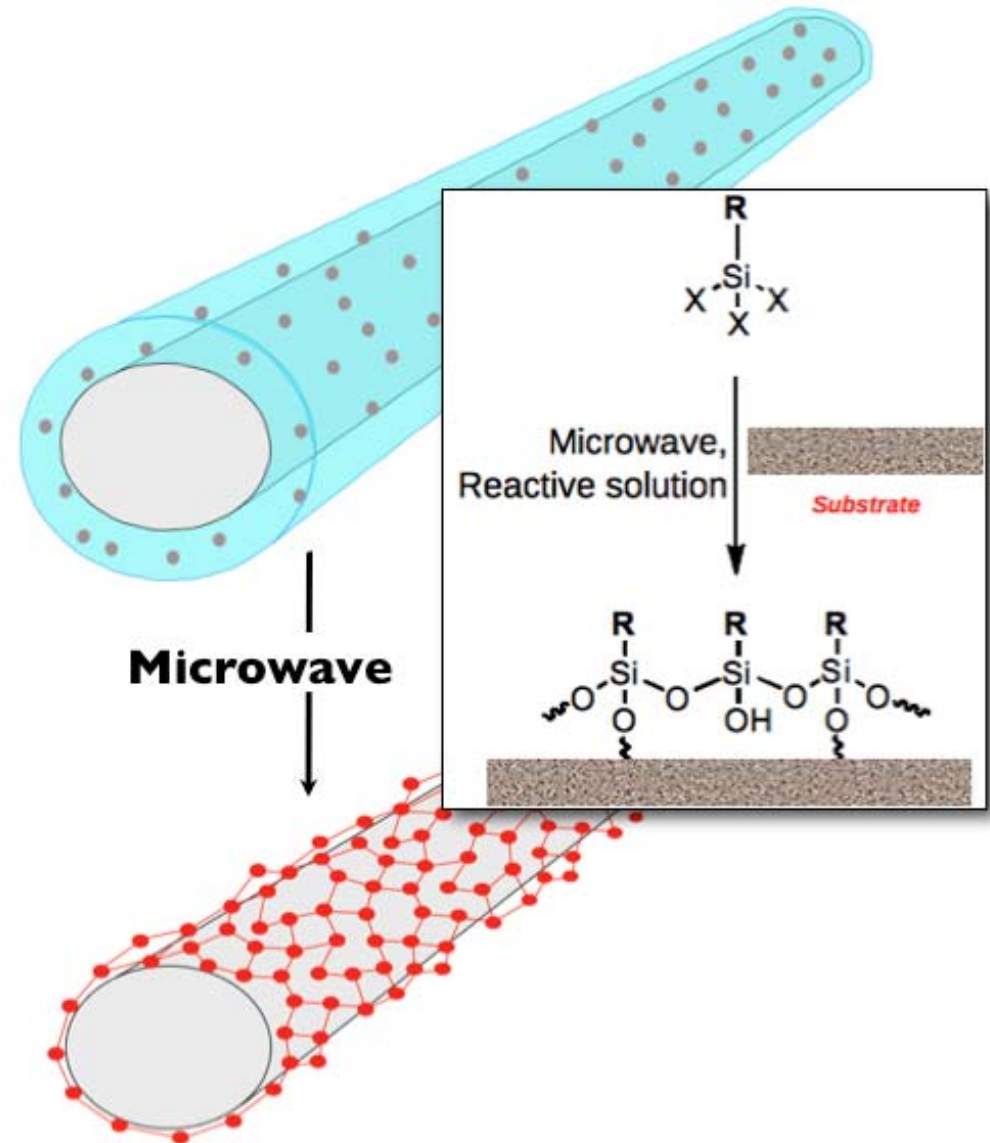
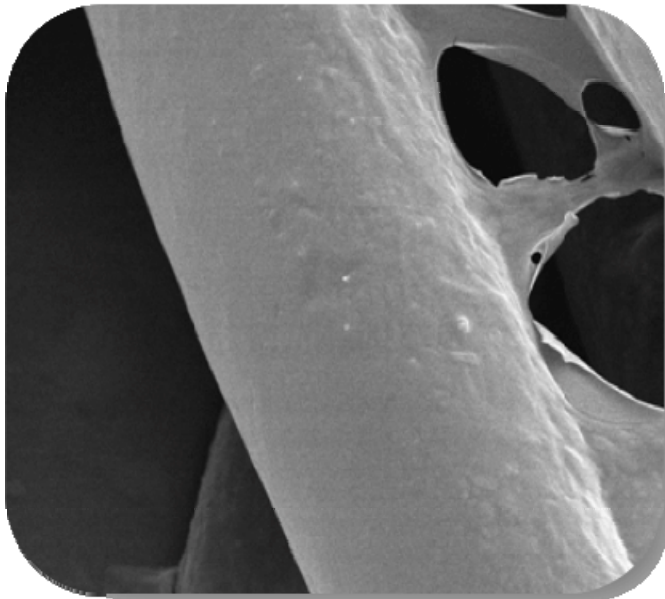
Changes the way materials perform and how we use them

*WBT Showcase: Alexium awarded The Worlds Best technology 2009 by panel of Fortune 500 Technology Scouts and V.C's ahead of 90 finalists from 11 countries

Basis of Technology

Uses “cold” microwave energy to direct a precursor’s polymerization onto a substrate’s surface

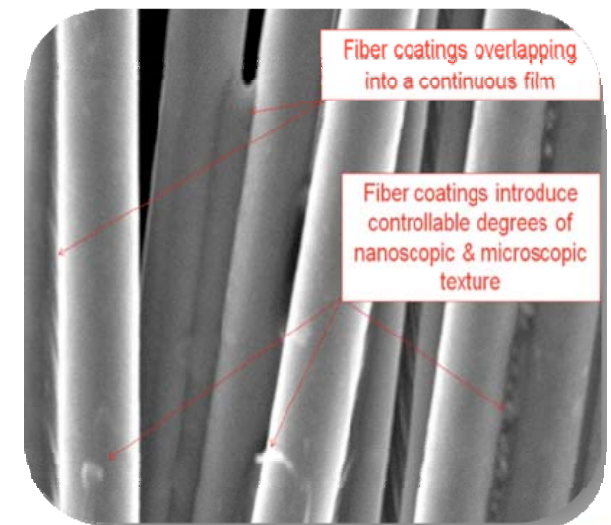
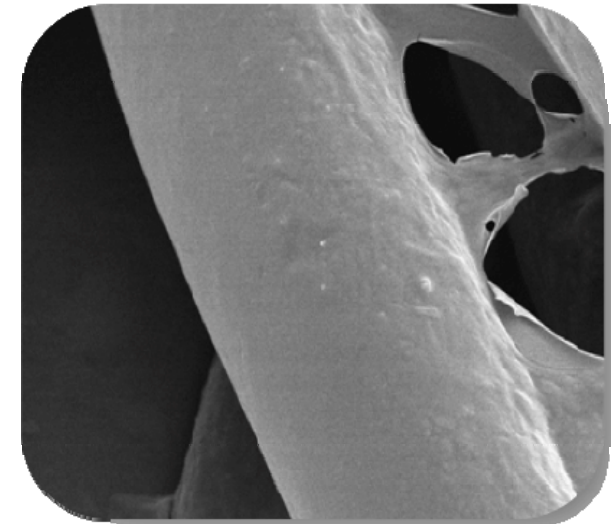
Nanososcopic “shrink wrap” coating may chemically bond to the substrate or simply form an intractable coating at the substrate surface.



Initial Focus on Technical Textiles

- Fast growing and valuable area of textile use
- RST creates a protective barrier for the textile
- No significant change in feel or “hand” of fabric
- Extremely light weight “nanoscopic” but durable
- Multiple functions may be included
- Continuous “reel to reel” treatment capability
- No harmful surfactants or solvents
- **Performance + Environmental Benefits**

= DISRUPTIVE TECHNOLOGY



Specific Focus – Synthetic fibres

- RST particularly effective with organic polymers such as aramids and polyolefins
- These materials have unique properties for specialist applications but often require additional functionality
- They are usually inert or heat sensitive meaning conventional coating techniques may be difficult or impossible to apply
- Alexium approach is to use RST to apply unique durable functional coating network around the fabric fibres to give new properties to the fabric without adversely affecting the fabric's inherent properties



Potential RST Applications

Industry	Potential Application	Driver	Concept Tested	Comments
Textiles	Defence	Performance	Yes	CBRN suits, tents, masks, filters, boots
	Industrial Filters	Performance / Cost	No	Oil and water filters, filter membranes
	Furnishings / Upholstery	Performance / Cost	Yes	Fire retardant treatment, stain and water repellence
	Leather Footwear	Performance	Yes	Oil and water repellence
	Composite Fabrics	Performance	No	Improve fabric/resin adhesion
	Ballistic Fabrics	Performance	No	Improve water repellency / ballistic protection
Paints	Regenerating Antimicrobial	Performance	Yes	Hospital and hygiene, longitudinal study
	Marine Antifouling/ballast	Performance / Cost	No	RST to address regulatory issues faced by the shipping industry
Packaging	Cellulose Packaging	Performance / Cost	No	Grafting of anti-counterfeit 'watermarking' applied to packaging
Glass	Self Cleaning	Performance / Cost	Yes	Single and multiple functionality to glass

Key Technology & Commercial Partner

Jan 2012

New Cooperative R&D Agreement (“CRADA”) with US Air Force:

1. to further advance the RST technology to commercial markets and explore new applications
2. To jointly explore the use of RST on new materials as well as the integration of the RST technology with new nanoparticles developed by the US Air Force
3. To expand on recent technology advances made by Alexium for both military and commercial applications



Commercial Focus - Military Textiles

Improved multi-functional military textiles could be used by an estimated 1,500,000 US military personnel

Annual textile procurement by DOD approx \$2 billion

Alexium technology working on solutions for technical textiles for military applications including ballistic protection as well as chemical & biological protection

Technology now “*out of the lab*” and under evaluation by industry partners and the US Army Natick Soldier System Centre



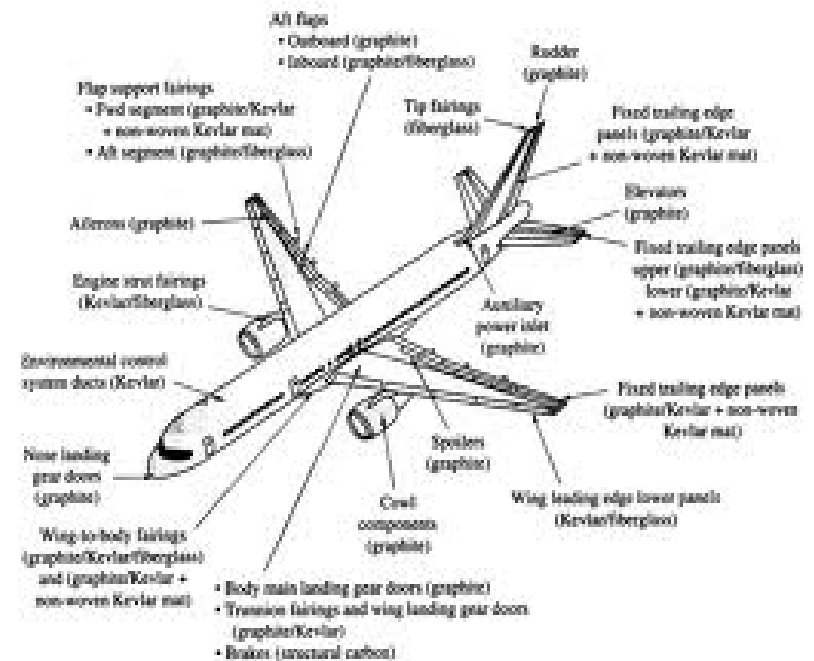
Commercial Focus - Technical Textiles

Composites; fast growing textile applications: in aviation, automobiles, wind turbines, marine, etc.

Growing use of synthetic fibres (aramids, polyolefins, carbon, etc) combining strength with low weight

Challenge of improving interfacial bonding of organic fibres for stronger lighter materials

Alexium working with partners to treat composite fabrics to improve fibre/resin adhesion and composite performance

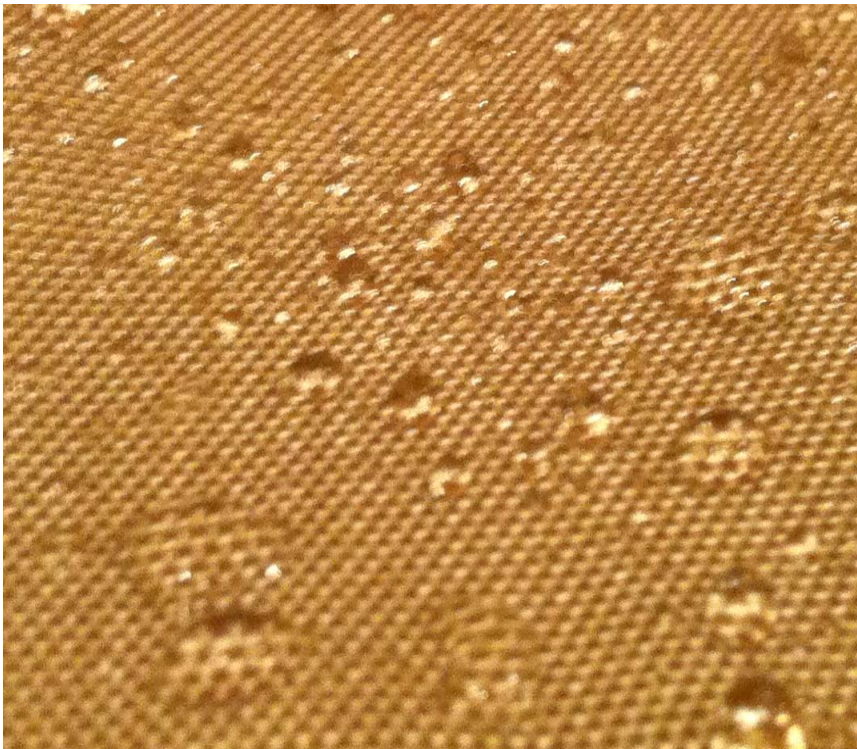


Technology Breakthrough - Nanotechnology

Amplified Dynamic Water Repellency via “Nanofiller”

Incorporated into Alexium RST Coatings

Changes Micro-Porosity of the Fabric



Cleanshell™

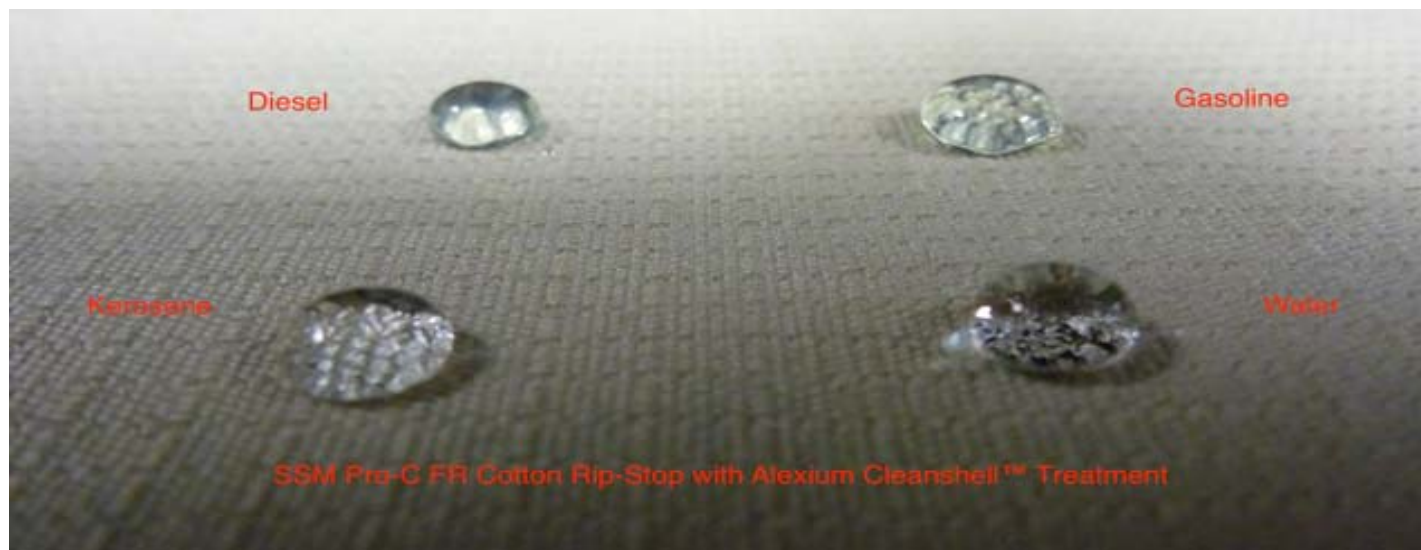


Cleanshell™ + Nanofiller

Technology Breakthrough - Chemical & Biological Repellency

New Alexium *Cleanshell* chemistries now offer repellency for days against targeted Chemical Warfare Agent (CWA) simulants such as tributylphosphates (compared with the hours offered by traditional fluorocarbon treatments)

Now under evaluation at the Army Natick Soldier System Centre



Technology Breakthrough – Flame Retardant Nylon

Nylon is strong, inexpensive but performs poorly (burns, melts, drips) in the event of heat & flame

Industry often substitutes nylon for vastly more expensive materials when risk of heat/flame

FR nylon does not currently exist in the marketplace without heavy, toxic backcoating

Alexium has discovered a new non-halogenated FR chemistry that affords durable FR coating for nylon textiles

Coating is environmentally friendly and fabric remains breathable. Treated fabric self-extinguishes, non-melt, non-drip

High volume/high value potential applications including military textiles, tents, sleeping bags, work wear, furnishings



Business Model

- Initial focus on **high performance textiles**
- Exploit “**value-added**” opportunities for the technology with partners
- **License /JV agreements** with industry leaders for each application
- Develop **strategic relationships** with key chemistry partners
- “Specify” Alexium technology for major **defence** programs
- Broader **collaboration** with major textile providers to US defence industry
- Expand commercial applications for **broader applications** with textile partners globally
- Exploit **non-textile** opportunities

Intellectual Property and Agreements Summary

- US patent applied by DoD
- Alexium holds exclusive license for the US market (including military)
- Alexium has filed patents in key territories globally (excluding USA)
- Initial UK & Hong Kong, Singapore patents already granted to Alexium
- Agreement between Alexium and US Air Force secured Alexium future technology development opportunities
- Nominal royalties on sales in the USA paid by Alexium to DoD



New South Carolina Facility

- Announced by South Carolina, Secretary of Commerce
- 5 to 10 year tax ‘holiday’
- State and local property tax, corporate income tax, sales tax and job tax rebates together with training incentives provided by South Carolina and Greenville County
- 11,000 ft² R&D and demonstration facility completed in June 2010
- Close to leading materials, chemicals industry companies, academic establishments and Fortune 500 companies
- Facility will support both US DoD and commercial partner requirements for treating materials for additional development testing



Gaining Momentum

- May 2010** New Greer, South Carolina facility
- June 2010** Commissioning of first RST unit
- July 2010** First sales to US DoD
- Jan 2011** New RST unit to double production
- Mar 2011** \$8 million 3 year funding facility secured from Roswell Capital
- Mar 2011** New ALEXIUM C6 chemistry presented at AATCC Conference
- Mar 2011** MOU with International Textile Group
- Aug 2011** Alexium develops Cleanshell CB Technology and enters DOD tech demo
- Dec 2011** Enters customer trials/evaluation of environmentally friendly C6-based repellency treatment for ballistic fabric
- Jan 2012** Develops technology for flame retardant/ repellent nylon

Potential Future Revenues

US Department of Defence

- Initial purchase orders for testing materials on new applications
- DoD evaluation now underway for new Cleanshell CB treatments

Commercial

- Discussions, trials, testing, etc accelerating with major partners in textiles and chemicals in conjunction with technology demonstrations
- Commercial licensing revenues expected after successful demonstrations
- Estimate revenue rising from 2013

Investment Summary

- Unique high performance award winning coatings technology
- Effective treatment of difficult to treat organic textile substrates
- Environmentally friendly water based technology eliminates the need for surfactants/emulsifiers and oven curing.
- Effective, scalable and simple to deploy by industry
- Addresses the needs of multiple global industrial applications
- Alexium holds exclusive global commercial rights
- Alexium high end repellency treatments and unique flame retardants
- Accelerating path to commercialization with growing list of partners
- Licensing model provides re-occurring revenue streams

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