

AVERTICA

A Research Company



Developing Semi-conductive Polymers
To Transform Energy Use

www.Averticainc.com



OUR COMPANY

Avertica is an early stage start-up company developing novel compounds and polymers for electronic device applications. Many of our compounds and polymers are inspired by naturally occurring chemicals and biological polymers. We have developed low-cost, simple methods for producing linear conjugated polymers and polymer networks with diverse properties. These compounds and polymers may have uses in diverse applications including touchscreen applications, organic light emitting diodes, solar collectors, light detection, memory devices, molecular electronic applications and supercapacitors for energy storage.

SCIENTIFIC PROGRESS

- Avertica holds patents for several classes of novel complex polymers, incorporating polypyroles, polyindoles, and polyazines with significant electronic properties.
- Avertica has developed extremely large molecules, with extended pi orbitals, which would magnify the effect of the electronic properties.
- Avertica's complex matrixed polymers can expand in multiple dimensions, not just in a linear direction. While most linear polymers result in extremely fragile compounds, our matrixed polymers are significantly larger and more resilient.
- Avertica has the ability to custom design and produce novel polymers, and has demonstrated that ability with over 100 novel polymers

OUR MATERIALS

- Avertica's polymers have extended conjugated pi orbitals with delocalized electrons that may provide dramatic increases in surface area, power density and energy density
- Avertica has demonstrated multiple physical characteristics, including planar molecules and thermoplasticity
- Can be made inexpensively (<\$10-\$50/Kg)
- Manufactured using environmentally safe solvents like water and ethanol.

RESILIENCE Assets

- POLYMER SCIENCE
- MATERIALS SCIENCE
- INTERFACE SCIENCE
- POTENTIAL CAPABILITIES:
 - HIGH ENERGY DENSITY
 - HIGH POWER DENSITY
 - HIGH SURFACE AREA

CONTACT US:

AVERTICA, INC.

2 DAVIS DRIVE

RESEARCH TRIANGLE PARK, NC

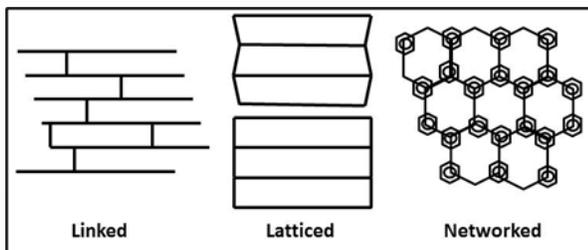
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240-344-5882



OUR POLYMERS

While many polymers are limited to a linear structure, Avertica's patented cross-linking agents enable the linking of linear polymer chains into multiple complex molecular architectures while maintaining a conjugated pi orbital. Using a combination of oxidation and condensation methods of polymerization, Avertica has created a large number of complex polymers with various structures. Avertica also could use enzymatic methods if required.



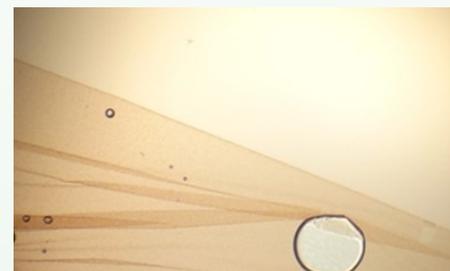
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EXAMPLE POLYMERS



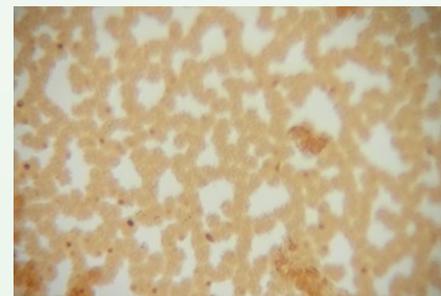
A



B



C



D

Polymer sheets networks with compound 2 and 5-hydroxyindole (A), serotonin (B), and indole (C and D). 6-hydroxyindole did not network into a polymer sheet under these conditions. Controls of indole, 5 - hydroxyindole and 6, hydroxyindole alone only formed amorphous dark particulate precipitates.

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AVERTICA'S PATENTS

- Patent 9,193,819 covers the process used to create thousands of novel networked conductive and semi-conductive polymers, as well as numerous specific polymer examples of novel linear and networked polymers and the use of these polymers in electronic devices and system applications.
- Patent 9,200,106 describes multifunctional cross-linking agents used to form networked conjugated polymer systems.

KEY PERSONNEL

Nicholas Duck, Ph.D. and CEO

Dr. Duck received his training in Biochemistry at the University of Maryland (BS, 86) and University of Missouri (MS, 88; PHD, 92). Duck has lead research programs in biochemistry and molecular biology while at Monsanto, Ceiba Geigy, Novartis, and Dupont. In 2001, Duck, along with several colleagues founded Athenix, a research company focused on the discovery of genes and chemistries for agricultural specialty chemical, and chemical feedstock bioconversions. Athenix was acquired by Bayer in 2009, in transaction valued in excess of \$400 Million USD. Dr. Duck continued with Bayer for two years leading the research efforts of a ~100 scientists and staff at Bayer's Innovation Center near Research Triangle Park, North Carolina. Currently, Dr. Duck is funding the research and business activities of Avertica. Dr. Duck has more than 50 patents and numerous scientific publications to his credit.

Andrew Duck

Mr. Duck brings more than three decades of experience in planning, directing and leading operations in both the public and private sectors. As a retired Military Intelligence Officer, Mr. Duck brings an understanding of the wide variety of energy needs facing the Intelligence Community. In addition to serving in Iraq and Bosnia, Mr. Duck served as Chief, Futures and Studies of the Army Intelligence Campaign Initiatives Group and in other positions in the military and intelligence industry. Mr. Duck holds a Bachelor's Degree in Public Administration from Texas State University and has done graduate study in Economics with the University of Oklahoma.



PARTNER CAPABILITIES DESIRED

Avertica is seeking partners with demonstrated experience in Component Engineering and Manufacturing. We believe Avertica's patented polymers and polymerization process could provide the novel materials required to support breakthrough technologies by providing materials for battery components, supercapacitors, and other potential components, such as photovoltaic materials.

Please contact Mr. Andrew Duck at Andrew.Duck@averticainc.com or 240-344-5882 to obtain additional information about Avertica's capabilities and availability for Teaming arrangements.

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AVERTICA INFORMATION

- NAICS: 541712
- DUNS: 078675904
- CAGE: 6TNQ8