Diamond, nature’s extreme material, is renowned for its incomparable properties such as exceptional hardness, high stiffness, low friction, biocompatibility and outstanding thermal conductivity — just to name a few. For decades designers and engineers have sought to harness the attributes of diamond for a variety of engineering uses, but until now diamond has been notoriously difficult to work with, prohibitively expensive and without a reliable supply. Advanced Diamond Technologies (ADT), the world leader in developing and applying diamond films for electronic, mechanical, industrial and biomedical applications, offers several families of high-performance products that exploit the unsurpassed characteristics of diamond.

Leveraging research originally funded by the U.S. Department of Energy, ADT’s proprietary technology captures the properties of natural diamond in a nanocrystalline thin-film form known as UNCD®. Known for its ability to seamlessly integrate with other materials, UNCD is mirror-smooth. Since it is vapor deposited, UNCD can be used to bring the properties of diamond to existing products while enabling entirely new classes of high performance devices.

ADT was formed on the premise that the diamond age is upon us. Some have referred to this as the “Carbon Century” due to other advances in nanostructured carbon materials. With the advances brought about by UNCD, diamond can now be considered by engineers during the design phase from their palette of materials to enable entirely new classes of applications. ADT is the recipient of many international awards recognizing the quality of its technology and its innovation.

Benefits

- Exceptional robustness
- High performance
- Inert

UNCD Applications

Electronics

- RF MEMS
- Thermal management electrodes
- AFM probes for nanoscale imaging
- Implantable biomedical devices
- Biocompatible coatings
- Biosensors

Industrial

- Low friction, wear-resistant coatings
- Mechanical seals for pumps
- Thrust bearings

Environmental

- Electrochemical water treatment
- OSG for generation of mixed oxidants for cooling towers
- EAOP for oil/gas fracking

Awards & Honors

- Red Herring 100 Finalist 2007
- Global Leader in Nanotechnology 2008
- Frost & Sullivan Product Innovation of the Year Award 2006
- NSF Small Business Innovation Research Award 2006
- Rest of Small Tech Award 2006
- R&D 100 Award 2006

www.thindiamond.com
Advanced Diamond Technologies Product Offerings

**UNCD Wafers**
UNCD Wafers are wafer-scale diamond products used for MEMS development, tribological testing and unique nano-scale processing applications. UNCD Wafers offer the ability to create and experiment with the extraordinary properties of diamond using the award winning family of UNCD materials.

**NaDiaProbes**
NaDiaProbes are made using ADT’s multicrystalline diamond, UNCD. UNCD has many of the desirable characteristics of diamond such as hardness, modulus and fracture toughness. Because of this hardness, the tips resist damage which enhances resolution and increases tip lifetime. UNCD also has diamond’s exceptional surface properties of low friction and stiction for superior all-around imaging performance particularly on soft materials.

**UNCD Components**
UNCD Components bring the durability and low friction of diamond to mechanical seals, hydrodynamic thrust bearings and tilting-pad bearings. UNCD Components are processed using patented and award winning diamond technology from Advanced Diamond technologies (ADT). Components bring exceptional life and robustness to industrial equipment.

**Diamonox Cells**
ADT’s Diamonox Electrochemical Cell product line consists of five electrochemical cells that share an important commonality: Diamond and what diamond can enable. The Diamonox Cell line incorporates UNCD diamond electrodes that enable self-cleaning and a high-degree of tolerance to water conditions. Diamonox Cells are primarily designed for on-site generation of mixed oxidants. They provide a robust, economic, and ecologically more attractive solution to purchasing and storing chemicals such as sodium hypochloride for use in a wide variety of applications including wastewater treatment, ozone generation, cooling towers, commercial pools, and water used in oil & gas production.

**Application Development for Hard Problems**
Using our proprietary diamond technology, UNCD, ADT is tackling some of the world’s most challenging issues - from water purification to anti-coagulation devices to biomedical sensors. The following are just a few examples of how ADT is solving the world’s hardest problems:

**UNCD SENSOR SUBSTRATES**
for electrochemical sensors

**DIAMOND RF MEMS**
for mobile wireless applications

**DIAMOND BIOSENSORS**
for real-time sensing of bio threats

Contact ADT directly to learn more about our application development at (+01) 815.293.0900 or info@thindiamond.com.