



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.



UNCD Mechanical Seal



UNCD AFM Probe



UNCD MEMS Wafer

Awards & Honors



Benefits

- ◇ Exceptional robustness
- ◇ High performance
- ◇ Inert

UNCD Applications

Electronics

- ◇ Diamond MEMS
- ◇ Frequency references
- ◇ Bulk and surface acoustic wave devices

Mechanical/Industrial

- ◇ Low friction, wear-resistant coatings
- ◇ Mechanical seals for pumps
- ◇ AFM probes for nanoscale imaging
- ◇ Superior cutting tools
- ◇ Thrust bearings

Medical

- ◇ Biosensors
- ◇ Implantable biomedical devices
- ◇ Biocompatible coatings
- ◇ X-ray windows
- ◇ Electrodes for water purification

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