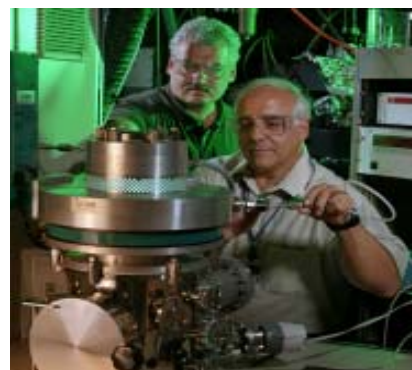


## *Ultrananocrystalline Diamond (UNCD)*

### 2006 FLC Award Winner

The Ultrananocrystalline Diamond (UNCD) coating technology, invented and developed at Argonne National Laboratory, captures many natural diamond properties in thin-film form and greatly surpasses other diamond film technologies with commercial potential. UNCD films can be used in a broad and diverse range of applications from macro to nanodevices, such as energy-saving ultra-low friction and wear coatings for mechanical pump seals and tools, for example, high-performance microelectromechanical and nanoelectromechanical system (MEMS/NEMS)-based telecommunication devices, the next generation of high-definition flat panel displays, in-vivo biomedical implants, and biosensors. This novel UNCD thin-film technology has been successfully transferred to Argonne-founded start-up company, Advanced Diamond Technologies, Inc.



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### Patents

- 5,902,640 Method of improving field emission characteristics of diamond thin films, May 11, 1999
- 6,447,851 Field emission from bias-grown diamond thin films in a microwave plasma, September 10, 2002
- 6,422,077 Ultrananocrystalline diamond cantilever wide dynamic range acceleration/vibration/pressure sensor, July 23, 2002
- 5,989,511 Smooth diamond films as low friction long wear surfaces, November 23, 1999
- 5,620,512 Diamond film growth from fullerene precursors, April 15, 1997
- 6,592,839 Tailoring nanocrystalline diamond film properties, July 15, 2003
- 5,849,079 Diamond film growth argon-carbide plasmas, December 15, 1998
- 5,772,760 Method for the preparation of nanocrystalline diamond thin films, June 30, 1998
- 6,793,849 N-type dropping of nanocrystalline diamond films with nitrogen and electrodes made there from, September 21, 2004
- 6,811,612 Patterning of nanocrystalline diamond films for diamond microstructures useful in mems and other devices, November 2, 2004