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Press Release

Advanced Diamond Technologies Awarded Grant from National Science Foundation to Accelerate Development of Ultrananocrystalline Diamond-processed Pump Seals

Champaign, IL, July 20, 2005: Advanced Diamond Technologies, Inc. (ADT), a leading advanced materials company pioneering the use of nanocrystalline diamond films for engineering applications, today announced that it has been awarded a \$499,530 grant from the National Science Foundation (NSF). This Phase II Small Business Innovation Research (SBIR) grant will be used to accelerate the development of pump seals enhanced with ADT's Ultrananocrystalline Diamond™ (UNCD™). This grant will allow ADT and its commercial partner, John Crane, Inc., to develop a wide variety of pump seals enhanced with UNCD and bring them to market in a number of demanding application areas.

"By imparting superior surface properties to pump seals, this application of UNCD fulfills ADT's vision of 'Diamond is an Engineering Material™'," said ADT President Neil Kane.

Phase I results of the SBIR project confirmed that UNCD-processed pump seals could be placed into service in highly demanding applications, ones that cause even state-of-the-art silicon carbide seals to fail, and show virtually undetectable wear. "I have been involved with seals and sealing applications my entire career. The wear results achieved in the Phase I project were outstanding, and we look forward to continuing the development in Phase II," said James Netzel, ADT's Director of Seals Engineering and the Principal Investigator (PI) for the grant.

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“Our relationship with ADT has been very positive so far, and we look forward to continuing to work with them on the development of UNCD for mechanical seals for pumps and other rotating equipment applications,” said Richard Page, Director of Marketing for John Crane, Inc.

UNCD was invented at Argonne National Laboratory, with funding from the Dept. of Energy (DOE), Office of Science, which licensed the fundamental UNCD patents to ADT in 2004. The Industrial Technology Program (ITP) in DOE’s Office of Energy Efficiency and Renewable Energy played a critical role in translating the UNCD technology from basic science into one with industrial benefits. This NSF SBIR project complements the on-going ITP project and will accelerate the commercialization of UNCD-processed mechanical seals for pumps resulting in significant energy savings for domestic industry.

UNCD, which is available commercially, is a form of nanocrystalline diamond characterized by grain sizes that are 3-5 nm in diameter. UNCD has many of the exceptional surface and bulk properties of natural diamond including hardness, low friction and superior wear resistance, but in thin film form. Notably, UNCD films are very smooth as deposited, which is a requirement for pump seal applications.

Mechanical pump seals are sealing elements found in pumps of all types ranging from the chemical and petroleum industry to food processing, pharmaceuticals, and water management. Pump seals help contain the fluid being pumped and keep contaminants out. By processing the mating surface of a pump seal with UNCD, seals will last longer due to UNCD’s exceptional hardness, they will save energy due to the low coefficient of friction of UNCD, and they will be less likely to have undesirable environmental emissions.

About Advanced Diamond Technologies, Inc.

ADT, based in Champaign, IL, was formed in December 2003 to provide diamond thin-films and materials integration solutions to the world in a variety of application areas. Its foundational technology was licensed from Argonne National Laboratory. Its website is www.thindiamond.com.

About Argonne National Laboratory

The nation's first national laboratory, Argonne National Laboratory supports basic and applied scientific and technological research across a wide spectrum of disciplines. Argonne is operated by the University of Chicago for the U.S. Department of Energy. For more information, please visit www.anl.gov.

About John Crane, Inc.

John Crane is the acknowledged technology leader and the world's largest manufacturer of mechanical seals and associated products. With a workforce of over 6,000 people in 50 countries, John Crane provides an unrivalled global presence combined with personalized local service and support. John Crane offers a comprehensive range of engineered mechanical seals and sealing support systems, mechanical packing, power transmission couplings and centralized lubrication systems under the brand names John Crane, Sealol, Safematic, Flexibox, Metastream, Powerstream, and Lemco. These products are sold widely into rotating equipment applications in Petroleum, Chemical, Pharmaceutical, Pulp & Paper, Power Generation, Food & Beverage, Mining & Minerals, Transportation, Industrial, Water & Waste, Refrigeration, Automotive, and Appliance markets. For more information, visit www.johncrane.com.

About the National Science Foundation's SBIR Program

The U.S. National Science Foundation (NSF) Small Business Innovation Research (SBIR) program is a highly competitive program that encourages small business to explore their technological potential and provides the incentive to profit from its commercialization. By including qualified small businesses in the nation's research and development arena, high-tech innovation is stimulated and the United States gains entrepreneurial spirit as it meets its specific research and development needs. Since its enactment in 1982, as part of the Small Business Innovation Development Act, SBIR has helped businesses to compete for federal research and development awards. Their contributions have enhanced the nation's defense, protected our environment, advanced health care, and improved our ability to manage information and manipulate data.

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