



## **2006 Partnership Award**

### **Ice Slurry Medical Coolants**

#### **Cold Core Therapeutics, LLC Argonne National Laboratory**

The ability of cells to survive oxygen deprivation after a cardiac arrest, heart attack, or stroke can be significantly improved by rapidly cooling the affected organs. The same principle applies during various laparoscopic surgical procedures, thus cooling lengthens the acceptable surgical window. Argonne National Laboratory engineers, working with the University of Chicago Medical School have developed a fast-cooling, easy to use ice slurry along with associated slurry generation methods, delivery equipment, and medical use protocols. The ice slurry coolants are a mixture of micron-sized ice particles and salt water that can be injected into a patient's body to rapidly cool target organs. This capability will markedly change medical practices and allow better patient outcomes. For example, using traditional methods cooling an adult to 4°C may take more than four hours; using the ice slurry an adult's brain can be cooled to 4°C in less than 15 minutes an obvious advantage during a medical emergency. Similarly, the surgical window for laparoscopic surgery on the kidney is typically about 30 minutes with traditional methods. With the ice slurry this surgical window can be extended to two hours.

A close collaboration between Argonne National Laboratory and the University of Chicago Medical School ultimately evolved into the formation of Cold Core Therapeutics, LLC. which began seeking venture capital funding in 2005 with the support of the laboratory and the school. This cooperative relationship will continue through clinical testing of the existing technologies and the future development of spin off product lines. In addition, computational modeling performed for this project forms the basis for a proposed NIH Center for Computational Thermal, Structural, and Fluid Models of Organs/Organ Networks that would be a partnership between five institutions: Argonne National Laboratory, the University of Chicago Medical School, University of Kansas Medical Center, ABAQUS Central Inc., and Flowmaster USA, Inc.