



**LABORATORIES, INC.**

An ISO 9001:2000/AS9100 Rev B Company

## The Aptek Newsletter

Spring 2008

### Aptek Laboratories, Inc. Earns AS9100B Certification

In September 2007, Aptek Laboratories, Inc., Valencia, CA was awarded certification to SAE International Standard AS9100B. This is a Quality Management System for aerospace requirements. This standard is being increasingly used by aerospace companies because it meets the compliance and registration requirements of ISO 9000 while providing increased assurance of meeting the stringent and complex aerospace requirements for reliability, maintainability and safety. AS9100B places emphasis on the design and development process, risk identification, main characteristics and supply chain quality. The Certificate of Registration was issued by ISA International Standards Authority, Inc., Chino, CA. For further information on Aptek's Quality Management System, contact Administration, at 661-257-1677 or email at [hr.admin@apteklabs.com](mailto:hr.admin@apteklabs.com).

#### The World of Materials Engineering

If you have design responsibility for equipment that must operate under difficult conditions within aerospace, military or high-technology electronics environments, you understand the challenges facing you. If your company has a Materials Engineer, get him/her on board early.

Aptek is fortunate in having been spawned on tough programs and probably has materials experience you might be looking for. We at Aptek are proud of our accomplishments in helping companies get the right material for the right application. Taking a look at our list of products will show you a wide variety of materials that have been fully characterized and are used in numerous applications. Our specialty is custom formulations, but quite possibly we have already developed the material you need. Give us a call.

#### Thermal Mismatch—the Daunting Requirement

You have an aluminum oxide ceramic printed circuit. It must be bonded to an aluminum back plate since it is necessary to remove heat from the ceramic PC.

First problem—aluminum, the metal, expands or contracts about five times more than the ceramic. Second problem, the interface between the aluminum and ceramic must be intimate - i.e. no voids - to insure heat flow through the interface.

And this all has to work over wide temperature and humidity ranges. This translates to an interface material that can take the thermal mismatches repeatedly and provide excellent adhesion throughout the equipment life cycle. Aptek has extensive experience in thermal stress management. Take a look under Technical Articles for more.

**Our Formulations Are Your Solutions™**



## Low Outgassing Materials for Space

If you look very closely at the adjacent picture, you can see the planet Earth at about 11 o'clock. That little dot is *us*, as seen from planet Saturn! This famous NASA picture was taken on September 27, 2007, from the Cassini Orbiter/Probe. It is certainly something to reflect upon. If you have ever dealt with NASA, you know that materials for space applications must meet stringent low-outgassing requirements. A material that outgasses in space can cause catastrophic consequences if the material condenses on a lens or mirror. To avoid such problems, NASA many years ago instituted low-outgassing requirements which are now summarized in ASTM Test Method E595-93, "Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment". Without delving into specifics here, be assured it is a tough test to pass. Aptek Laboratories, Inc. is proud to be a supplier to several NASA programs, including the Cassini Orbiter/Probe.

## Get Ready for Nanotechnology

Nanotechnology is more than a buzz word. The world of super-tiny particles with amazing properties is being explored by several companies including Aptek Laboratories, Inc. We currently have several in-house R&D programs where we are investigating the processing of nanoparticles into resin matrices and the resulting properties. These particles, in the billionth of a meter size, include nanocarbon fibers and tubes, nanosilica and nanonickel. While it is too early to publish any data, the possibility of extremely high thermal conductivity materials and electrically conductive materials does loom on the horizon. Give us a call at 661-257-1677 if you would like to discuss nanotechnology particles or any specific needs you may have.

## The Internet

Check out our website for a summary of Aptek products and capabilities. Go to [www.apteklabs.com](http://www.apteklabs.com).

## Eco-Friendly Materials

Aptek Laboratories, Inc. has long been committed to the ideals of a green world. We offer many materials that contribute to the ecology. Our eco-friendly materials include UV-cured coatings, adhesives and encapsulants, low VOC coatings, lead-free adhesives that replace lead-solders, snap-cure technology for significant reduction in energy costs, room temperature curing materials that require no heat, and advanced thermal coatings for improving solar panel efficiencies.

Take a look at our Product Guide and please call us if you have any questions.

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