

**TEDCO Federal Lab Program Presents:
The Naval Sea Systems Command**

Indian Head Showcase

“An Explosion of Technology”

**TEDCO Federal Lab Program
presents:**

**The Naval Sea
Systems Command,
Indian Head Showcase:**

**“An Explosion of
Technology”**

**July 24, 2001
9:00 am-3:00 pm**

**Naval Sea Systems Command-Indian Head
The Village Green Pavilion
Indian Head, MD**

\$25 per person

Directions: From the Capital Beltway (I-495), take Route 210 South (Indian Head Highway) for approximately 20 miles. Turn right onto Lackey Drive. The Village Green Pavilion and parking are to the left at the end of the street.

Register at www.mdhitech.org by July 17, 2001.

**For registration information, contact Angie Bergeron
at 240-453-6267.**

**For showcase information, contact Anita Balachandra at
410-715-4170 or abalachandra@marylandtedco.org.**

**For information about NAVSEA Indian Head, contact
the Public Affairs office at 301-744-6505 or visit
www.ih.navy.mil.**



These technologies have helped keep The United States Navy the most advanced naval force in the world.

Now they can help keep you ahead of your business competition.

Since 1890, the Naval Sea Systems Command Indian Head (NAVSEA-IH) has solved complex and sensitive engineering challenges, developed cutting-edge technologies and provided state-of-the-art solutions for both military and civilian clients. Many of Indian Head's technologies are ready for commercialization and have potential applications across a broad range of civilian interests. Indian Head engineers and scientists have designed and implemented cost-effective technologies that prevent and minimize environmental hazards in a wide range of industrial applications.

Now, this world leader in engineering research and development can work with your private sector company to solve the technical challenges of the 21st century.

See how these technologies can keep your business moving full speed ahead at the NAVSEA Indian Head Showcase.

Opening Remarks

Technology Transfer and Methods of Doing Business with NAVSEA-IH, *J. Scott Deiter, Ph.D., Office of Research and Technology Applications Representative*

- Utilize internationally recognized R&D experts for solving your problems
- Learn how to gain access to unique laboratory facilities
- Start/expand business by licensing Navy patents

TEDCO Technology Transfer Program Initiatives, *Steve Fritz, Ph.D., Director, Technology Transfer*

- Accessing pre-commercial development funding
- Working to develop commercialization strategies
- Providing access to venture capital and other development funds

Presentations

SESSION I

Applications for Differential Pressure Flow Sensor, *Mike Deeds*

- Robust Micro Electromechanical Systems (MEMS) based sensor that accurately and economically measures bulk fluid flow
- Capable of measuring flow over or in any body (e.g., boats, airplanes, pipes, etc.)

Combustion Engineering (Solid State High Temperature Synthesis), *Carl Gotzmer*

- Making high-technology critical materials through combustion engineering
- Mechanical/chemical synthesis
- Reduces hazards and environmental liability

Production of Nano Materials, *Pam Carpenter*

- Commercialization of process for production of nano-size materials
- Nano-size conductive fillers for plastics
- Nano aluminum pressed and sintered for high-strength materials

High-Strength Composites, *Vasant Joshi, Ph.D.*

- Manufacturing high-strength, heat-resistant composites
- Producing high-strength ceramics, heat exchangers

Application of Braiding Technology to Structural Composites and other Materials, *John Luense*

- Advanced braiding using fibers such as Kevlar, fiberglass, nylon and polyester
- Applications for packaging and handling safety

Gas Generants, Smokeless Pyrotechnics, Deep-Well Perforators, *Bill Koppes, Ph.D.*

- Nitrogen gas generators for airbags
- Applications for any devices requiring rapid gas formation
- Indoor fireworks using benign solid chemicals
- Smokeless pyrotechnic display with enhanced color
- High-energy perforators for enhanced oil recovery

Disposable, Low Cost Shock Damage Sensor, *Lawrence Fan*

- MEMS small size, 3-axis shock detection
- Provides electrical signal output to monitor predetermined shock levels
- Suitable for shipping and handling applications to monitor damage due to inappropriate shock

SESSION II

Providing Lifecycle Environmental Solutions, *Chuck Painter, Randy Cramer, Ph.D.*

- Green synthesis by supercritical fluids
- Environmentally friendly formulations and modeling
- Green processing, manufacturing, testing and waste minimization

Treatment of Hazardous Waste Using Molten Salts, *Jerry Salan*

- Mature, robust technology
- Low-temperature relative to incineration and combustion
- Atmospheric pressure application
- Self scrubbing reduces after treatment
- Treats solids, liquids, slurry and gases (e.g., PCB contaminated oils, mixed waste and contaminated paints)

Manufacturing Technology Showcase, *Chris Walsh, Ph.D.*

- Small-scale (pint) to large-scale (400 gallons) manufacturing capability
- Mixers, extruders, casting and machining equipment
- Commercial applications such as automobile airbag propellant

Commercial, Agricultural and Hobby Uses for Novel Liquids, *Doug Elstrodt*

- Backpack propulsion suits, drag racing supercharger and oil well borings
- Soil conditioning

Information Engineering, Kevin Grote

- Legacy code/model wrapping
- Software engineering for real-time systems
- Process control
- Distance learning over the Internet
- Web-enabled databases (Oracle and Sequel applications)
- Product data model/product genetic code
- Public Key Infrastructure and information security

Less-Than-Lethal Technology/Bola Launcher, John Murphy

- Law enforcement/peacekeeping applications
- Humane animal control
- Maritime application to disable speed boats

In-situ Real Time Optical Fiber Based Exploration, G.I. Pangilinan, Ph.D.

- Monitoring effluent flow/temperature/density/pressure at real-time
- Robust, simple optical techniques available
- Portable and cost effective
- Quality assurance for processes where real-time probing is essential

Poster Presentations

Continuous Processing of Highly Solids-Filled Materials, John Brough

- 20mm, 40mm, 88mm twin screw, co-rotating, intermeshing, high-pressure (3000 psi) machines
- Precision feed control systems
- Engineering capability to design, develop materials and facilities

Specialized Research Capabilities, Tom Russell, Ph.D.

- Material synthesis and formulation
- Modeling and simulation of physical systems

High Performance Emissions Scrubber, Dick Carns

- Reduce air emissions generated by: high/low volume or high/low mass
- HCO reduced particulates in hazardous emissions

Lockable Electro-Optical High Voltage Device, Paul Smith

- Micro-scale, mechanically-lockable switch/relay
- Uses: tamper-proof high-security locks, air bag arming/ignition systems

Design Improvement of Die Set/Mold, Phil Han

- Application of high-design technology to the general industry
- Manufacturing die set/mold to press extraordinary complicated materials
- Increase productivity by improving design and automation

Center for Applied Analytical Technologies, Karrie Sandagger

- Material and chemical characterization
- Mobile lab
- Forensic analyses
- Analyses for environmental issues
- Innovative and cost-effective solutions for analytical and engineering needs

High Energy, High Reliability, Miniaturized Actuators, Frank Valenta

- Man-portable high-energy tools
- Single-use event sequencing devices
- Explosive cutting/severing of wire harnesses, metal plates, structures, etc.
- Release/ejection/separation of payloads and stores
- Advanced non-electrical signal transmission subsystems
- Life support/saving components
- Aerospace reliability at a commercial price

Laboratory Tours

Those interested in taking the Laboratory Tours must be a U.S. citizen and will need to provide the following information upon registration: full name, Social Security Number and date of birth. Tour guests will be issued badges at the event.

MEMS Clean Room

- 1,000 square feet of class 10,000 workspace
- Mechanical, electrical and environmental test areas
- Many specialized pieces of instrumentation such as: probe station with 6-inch vacuum chuck, 4 degrees of freedom, aligner-bonder with 2-micron accuracy, wire bonder
- Optical inspection system to 1-micron resolution

State-of-the-Art E.L. Whitman Chemistry Laboratory

- Constituent analysis of materials
- New formulation studies, rate of reaction, gas transport, stabilizer depletion and many other chemical characterization studies
- Development of test methods for characterization of new materials such as insulation
- Environmental analysis and research
- Analysis for mechanical properties, chemical aging, safety and kinetics
- Failure investigations
- Nondestructive examination (including radiology, ultrasonic, magnetic particle, liquid-dye penetrate, eddy current) of metals and plastics
- Ferrous and nonferrous metallurgical analysis

Pilot Scale Continuous Processing Facility

- Magnetic Resonance Spectroscopy
- Wide range of material scale-up facilities from 1 pint to 420-gallon mixers
- Precision ingredient delivery systems
- Customized material handling and takeaway processes
- Wide array of process diagnostic sensors, hardware and software

Schedule of Events

9:00 am - 10:00 am	Informal Networking and Continental Breakfast
10:00 am - 10:30 am	Opening Remarks
10:30 am - 11:30 am	Session I Presentations
11:45 am - 12:45 pm	Session II Presentations
12:45 pm - 2:00 pm	Lunch and Poster Presentations
2:00 pm - 3:00 pm	Facility and Laboratory Tours (Tour seating is limited and requires advance registration. Please register early.)