

**Sensors, Nanotechnologies, Protective Coatings and More:
An Explosion of Technologies and Partnering Opportunities**
Featuring Presentations from the Indian Head Division
Indian Head Division, Naval Surface Warfare Center
25 June 2009

DETAILED AGENDA

- | | |
|---------------------|---|
| 8:30 am – 9:15 am | Continental Breakfast and Registration |
| 9:15 am – 9:30 am | Welcoming Remarks

Joseph F. Shannon, Jr.
State and Community Outreach, IHDIV, NSWC
Renee Winsky
Executive Director, Maryland Technology
Development Corporation (TEDCO)
Mark Glazer
Director of MdTech Programs, Technology Council
of Maryland (TCM) |
| 9:30 am – 10:00 am | Opening Remarks

Cynthia E. Gonsalves
Acting Director, Office of Technology Transition
Office of the Deputy Under Secretary of Defense
Advanced Systems and Concepts (AS & C)
Captain Neil Stubits
Commander, IHDIV, NSWC |
| 10:00 am – 10:30 am | Technical Session I

Self-Regulating Power Supply for Micro Electronic
Mechanical Systems Thermal Actuators (NC # 99,128)
Kristopher Nodianos <ul style="list-style-type: none"> • Control of devices that use thermal actuators <ul style="list-style-type: none"> ○ Optical devices ○ Micromotors ○ Electrical relays and switches • Monitoring of devices based on resistive concepts <ul style="list-style-type: none"> ○ Thermocouples ○ Hot wire anemometers |

MEMS INERTIAL SWITCHES

Dr. Daniel Jean

MEMS Multi-Directional Shock Sensor with Multiple Masses (NC # 96,543)

- Purely mechanical threshold device
- Small -<5 by 5mm for a single sensor
- Latching system stores shock event

MEMS Multi-Directional Shock Sensor (NC # 84,847)

- Consists of spring-mass system that moves in any direction within a single plane
- Purely mechanical; no batteries needed
- Detects rough product use and handling during shipping

Multiple Shock Event Sensing Device (NC # 95,544)

- Mechanically senses magnitude of successive shocks
- Handles multiple events – yet inexpensive
- No power or electronics needed for operation

Hermetically Packaged MEMS G-Switch (NC # 98,825)

- Switch closes above designed acceleration threshold (150 G)
- Tested to survive shocks > 50kG
- Hermetically sealed, surface mount component
- Over 100 prototypes successfully tested

Flow Driven Piezoelectric energy Harvesting Device

Dr. Michael Deeds (NC # 98,644)

- HVAC: sensor feedback for efficient operation
- Automotive: scavenge energy to power remote sensor networks
- Weather: remote, recoverable sensor pods
- Recreational/toys: LED speed indicator

10:30 am – 11:00 am

Networking and Exhibit Floor

11:00am – 11:25 am

Mechanisms For Partnering With IHDIV:

Dr. J. Scott Deiter, Technology Transfer Director, IHDIV
Chair, Federal Laboratory Consortium

- Available legal instruments
- Federal Laboratory Consortium Locator
- Patent Licensing Process
- Facilities/Capabilities Overview

11:25 am – 11:45 am

Success Story:

IMPASS for Portable Firing Range

Tony Chedrawy, CEO, MetOcean

11:45am – 12: 15 pm

Technical Session II

Integrated Maritime Portable Acoustic Scoring & Simulator (IMPASS) (Patent # 6,995,707/NC # 95,919)

Billy McClure

- Buoy system, battery operated, deploying sensors in temporary situations
- Capable of using hydrophones, chemical/bio sensors on buoys
- Useful at sea, ports, intrusions to ships, piers, dams

Novel Lightning Locating System (NC # 98,570)

Robert Daily

- Replace current NLDN system
- Install on existing cell-phone towers
- Fire department/Insurance industry applications

Functionalization of Carbon Nanotubes (NC # 97,547)

Dr. Farhad Foroohar

- Carbon nanotubes 1-10 nanometers in diameter
- Tubes have high tensile strength and thermal conductivity
- Uses in nano-reinforced nylons, drug delivery vehicles, chemical reactors

12:15 pm – 1:25 pm

Lunch, Networking, and Exhibit Floor

1:25pm – 1:40 pm

Maryland TEDCO Mission and Funding

James A. Poulos, III

Director, Technology Transfer and Commercialization

1:40 pm – 2:55 pm

Technical Session III

Perfluoroalkyl Passivated Aluminum

(Patent #7,192,549/NC # 83,960)

Dr. Jason Jouet

- Solution or gas phase applicability for Al passivation
- Applicable for all Al surfaces (films, particles, etc.)
- Robust monolayer prevents oxidation
- Applicable for microelectronics, lithography, pigment, composites

Joint Modular InterModal Container
(Patent #7,156,249 B2/7491,024 B2/NC # 97,340)

Mark Heinrichs

- Modular, stackable, collapsible, locks together, robotic handling
- Commercial uses for manufacturers, suppliers, distributors, trucking companies
- Marinas, FCL and LCL service companies
- Designed for international as well as domestic shipping

Method for Deposition of Steel Protective Coating
(Patent # 7,514,153 B1/NC # 96,666)

Harry Archer

- Green coating to protect high strength steel

MEMS MICRO-DETONATOR/INITIATOR FUZING SYSTEMS

Gerald Laib

MEMS Electronic Initiator for a Micro-Detonator
(NC # 98,420)

- Applying electrical charge to initiator in order to directly function a primary

MEMS Mechanical Initiator for a Micro-Detonator
(NC # 98,421)

- A striker is actuated and driven in to a suitable primary for purposes of initiating

MEMS Fuze Using a Micro-Detonator (NC # 98,419)

- Mechanically safe explosive detonating device
- Useful in explosive initiation applications requiring safety, reliability, and small size

Integrated Thin Film Explosive Micro-Detonator
(NC # 97,916)

- In-situ conversion of thin metal substrate to primary explosive
- Formation of flyer plate and barrel assembly consistent with semiconductor processing
- Integral part of MEMS oriented explosive train and safety and arming devices

Programmable Microtransformer (NC # 97,132)

Deran Eaton

- High energy, non-intrusive field sensors
- Inductive power transfer
- LED Bulk Light Drivers
- Haptic interface field elements
- Applications requiring custom shaped magnetic fields

2:55 pm - 4:00pm

Networking and Exhibit Floor