

**OPENING REMARKS, 9:00 am – 9:15 am**

Aris Melissaratos, Secretary, Maryland Department of Business and Economic Development

Tony Sarbanes, President, Wicomico County Council

Phillip Singerman, Executive Director, Maryland TEDCO

**TEDCO FUNDING FOR TECH TRANSFER, 9:15 am – 9:35 am**

Steve Fritz, Director, TEDCO Technology Transfer

**SUCCESS STORY, 9:35 am – 9:45 am**

ARCON Welding, George Bell (invited)

“Development of a Portable/Lightweight Stud Welder”

**SESSION I, 9:45am – 10:30 am**

**Transition Metal Complexes for Catalytic Hydrolysis of Phosphotriester Pesticides,**

Elizabeth Papish (Salisbury University)

- Practical Applications
- Catalyst Design
- Mechanism Elucidation

**Sediment Chemistry:** HPL value to Environmental Studies and Innovative Field and Laboratory Gear, Jeff Cornwell (Center for Environmental Science)

- In the last decade, the study of sediment nutrient cycling has changed from a largely academic exercise to a requirement for modeling and management of many shallow water ecosystem. Examples include the Chesapeake Bay and other estuaries, lakes, wetland, and river.
- While the cutting edge of this work may be best suited to academic institutions, the routine application of the incubation techniques and procedures may be best suited to non-academic concerns.
- The services available to agency and industry groups require a high level of expertise and are relatively specialized; most agencies cannot afford the cost of developing such a capability.
- The gear used, from sediment collection to incubation, may have a modest size market.

**Phytoremediation** – Use of Cadmium-accumulator types of *Thlaspi caerulescens* to clean contaminated soil, Chaney & Angle (BARC)

- Cadmium (Cd) contamination of rice paddy soils has caused adverse health effects in Japan, China, and Korea.
- Cd contamination from P-fertilizer production may comprise human or ecosystem risks requiring remediation in the US and Europe.
- Technology uses a selected *Thlaspi caerulescens* plant species for Cd phytoextraction from contaminated soils.
- The technology is ready to deploy at Cd contaminated sites, and can be further improved by continuing efforts to breed improved cultivars with maximum yield and Cd accumulation.
- Phytoextraction Associates LLC is cooperating with USDA-ARS under a CRADA and our intellectual properties are available for licensing.

**New Technologies for Monitoring Nutrient Levels In Aquatic Environments, Kelly &**

Codispoti (Center for Environmental Science)

- In order to respond to adverse events such as harmful algal blooms and to make informed management decisions rapid detection and dissemination of data dealing with nutrient levels is highly desirable.
- We have expertise in instrumentation that can autonomously measure and telemeter nutrient (e.g. nitrate, ammonium, phosphate) data.
- We are developing an autonomous urea sensor. d. We are investigating constructing a prototype nutrient mapping system that can be deployed from small craft.

**Reduction of Ammonia Emissions in Poultry Production**, Jeannine Harter-Dennis (UMES)

- Since the Environmental Protection Agency (EPA) is considering legislation to restrict nitrogen emissions from animal production units, UMES is involved in research to quantify the amounts and nature of nitrogen emissions from commercial broiler units.
- Research is also being conducted to evaluate methods to monitor ammonia production by commercial broilers.
- Current efforts to reduce ammonia production include litter amendments, feed supplements and environmental controls.

**Exploiting Advances in Knowledge of Suboxic Respiration**, Codispoti & Kelly (Center for Environmental Science)

- Increasing attention is being given to the need for reducing nitrogen loading into Chesapeake Bay and other aquatic environments.
- Recent advances in our understanding of suboxic respiration suggest that there may be more cost-effective ways of reducing nitrogen loading than the methods currently in use.

**Integrated Organic System Technologies for Environmental Protection and Remediation**, Patricia Millner (BARC)

- Sustainable landfill EcoCaps reduces methane by use of methanotrophic bacteria.
- EcoCaps technology increases carbon sequestration
- EcoCaps improves habitat for wildlife
- CropSoxx-V is an economical solution for applying compost in fruit/vegetable crop systems
- Reduces ozone depletion and replaces chemically-based soil fumigants
- CropSoxx-V inhibits plant root diseases and nematodes
- Compatible with certified organic and sustainable agricultural systems

**Predicting the success of wetland construction using microbial communities**, Katherine Miller (Salisbury University)

- Profiling established wetland communities using fatty acid methylester analysis
- Laboratory models for testing soil amendments

**BREAK AND POSTER SESSIONS, 10:30 am – 10:45 am**

**SESSION II, 10:45 am – 11:30 am**

**Intelligent Path Planning of Mobile Robots Using Sensor Fusion**, Ali Eydgahi (UMES)

- Multiple Industry applications for autonomous mobile robot navigation units

using multi-sensor data infusion techniques.

- Intelligent path planner mobile robots can be effectively used for military mine detection and minesweeping to medical applications in nursing and surgery.
- Local agricultural uses in the Delmarva region include fruit pick-up and seed dispersion.

**Instrumentation for High Precision and Rapid Analysis of Dissolved Gases in Water**, Todd Kana (Center for Environmental Science)

- Optimized membrane inlet mass spectrometer is a competitive alternative to conventional gas chromatography techniques.
- Useful for Marine, Limnological and Groundwater Testing, Pharmaceutical and Medical Industry Quality Control, Water Treatment Testing.
- Technology advancements needed: Software and Mechanical Integration of Components for the production of a Stand -alone Analyzer.

**NASA/Wallops Flight Facility Programs and Technical Capabilities**, Bruce Underwood (NASA)

- Wallops role in support of NASA, DoD, academia, and commercial industry
- Wallops science and technology research and flight programs
- Technical capabilities that enable Wallops programs, including aerospace manufacturing, environmental testing, and flight testing
- Information on opportunities to use Wallops capabilities by external organizations

**Innovative Application of Mapping Technologies for Industry, Research and Education**, Douglas R. Levin (UMES)

- Global application of remote sensing, geographic information systems (GIS) and global positioning systems (GPS) for industry-specific innovative problem solving projects.
- Locally involved in Chesapeake Bay restoration with Submerged Aquatic Vegetation and Oyster Restoration Programs.
- Application of high end technology to K-12 educational programs through creation of the Delmarva Society of Environomic Awareness (DeSEA) and a partnership with the Delmarva Discovery Center in Pocomoke City.

**Resilient Autonomous Flight Control Technology & UAV Test-Beds**, Philip Ward (NASA)

- Collaboration/partnership opportunity regarding onboard intelligent autonomous response to in-flight environments and contingencies within resilient system architecture
- Low-altitude unmanned carriers

**Remote Experimentation with An Internet Based Communication and Microwave Laboratory**, Mohammed Fotouhi-Ardakani (UMES)

- This state of the art laboratory enables the users to gain experiences working on various projects and related tasks at the same time.
- Remote computer access to laboratory instruments allows users to conduct actual experiments at any time from any location.
- This technology greatly enhances the flexibility of laboratory education and introduces users to the new paradigm of remote experimentation.

**Bacterial Source Tracking (BST) using Antibiotic Resistance Analysis (ARA)**, Frana & Venso (Salisbury University)

- Determining sources of fecal contamination of impaired tidal and non-tidal waters in Maryland
- Statistical analysis of likely sources, i.e. Wildlife, Livestock, Human
- Information used in remediation and determination of Bacterial Total
- Daily Maximum Loads (Bacterial TMDL's)

**Using WebCT to Create Distance Learning Tools**, Bolek & Pinhey (UMES)

- Educational applications for creating new learning tools using web authoring technology.
- Evaluating the efficacy of distance education learning.
- Promoting use of new Internet products.

**LUNCH, NETWORKING and POSTER SESSIONS, 11:30 am – 12:00 pm**

**PANEL DISCUSSION: Financing Technology Development, 12:00 pm – 12:45 pm**

**Moderator: Dr. William Moore, Dean, Perdue School of Business, Salisbury University**

**Panel Participants:**

1. **Martha Connolly**, Maryland Industrial Partnerships (MIPS) Program, University of Maryland
2. **Memo Diriker**, Director, Business, Economic and Community Outreach Network (BEACON), Salisbury University
3. **Mark Grovic**, New Markets Growth Fund, University of Maryland College Park
4. **John Hickman**, Eastern Shore Small Business Development Center
5. **Robbie Melton**, TEDCO

**SESSION III, 12:45 pm – 1:30 pm**

**Chromium Histidine Complexes as Nutrient Supplements**, Anderson, Bryden, & Polansky (BARC)

- Chromium is an essential nutrient involved in sugar and fat metabolism.
- Chromium supplements improve risk factors associated with diabetes and cardiovascular diseases.
- Chromium histidine is better absorbed than any of the currently available chromium supplements.
- Chromium histidine supplements offer a convenient, safe means to improve blood sugars, insulin, cholesterol and triglycerides.

**SS220: A Candidate Insect-Repellent Compound to Dethrone Deet**, Jerome Klun (BARC)

- SS220 evaporates less rapidly than Deet. Making for effective and longer- lasting repellent protection against mosquitoes, sand flies, and ticks.
- Unlike Deet, SS220 does not dissolve plastics.
- Extensive toxicological testing shows SS220 is safe and user friendly.
- The U. S. Military has selected SS220 for testing against Deet as new standard repellent for use by warfighters.

**Market Evaluation, Development and Implementation of an environmentally sound Marine Ornamental Plant aquaculture program**, Koch & Lazur (Center for

Environmental Science)

- Most marine/estuarine plants sold in aquaria stores are not native. This increases the potential for the introduction of invasive species.
- The technology for the economically viable propagation of native marine ornamental plants is in its infancy but will soon be re-evaluated at the University of Maryland Center for Environmental Science.
- By showing the viability of environmentally sound marine ornamental plant production we hope to increase environmental awareness while still providing an aesthetically appealing product.

**Development of New Polymer Blends Using Keratin Derived from Poultry Feather Biomass**, Barone & Schmidt (BARC)

- Poultry feather waste or biomass is a bountiful source of structural protein keratin.
- Protein keratin is a tough, strong polymeric material with properties that match or exceed commodity polymers derived from petroleum.
- Keratin is inherently bio-compatible and is an ideal material for use in biomaterials or biomedical applications.
- Feather keratin's unique amino acid sequence insures it can be thermally processed for easy blending and the making of tailored properties.
- Utilization of this biomass from poultry processing plants in technologically innovative ways aids rural development.

**Strategies for the improvement of plant performance and nutrition using a common symbiotic bacterium**, Mark Holland (Salisbury University)

- Increased germination
- Improvements in growth
- Gains in yield
- Altered nutritional quality

**New microorganisms, new genes, new enzymes: High-throughput cultivation to access bacterial diversity**, Byron Crump (Center for Environmental Science)

- A wealth of industry-applicable microorganisms and microbial enzymes remain hidden within natural bacterial communities because most bacteria have never been cultivated.
- New high-throughput cultivation techniques can create large bacterial culture collections and make previously unknown organisms available for industrial uses.
- I am looking for a partner to help establish a high-throughput bacterial cultivation center for the isolation and characterization of novel microorganisms.

**Moon Cake, A New Six Foot Tall High Value Vegetable Soybean Cultivar**, T.E. Devine (BARC)

- Moon Cake grows to a height of six feet.
- The cultivar is adapted to grow in the Chesapeake Region.
- It is adapted to growth in organic production systems for human consumption.
- Moon Cake is under Plant Variety Protection and available for licensing.
- Six bushels of seed are available for spring planting in 2004.

**ADDITIONAL POSTER SESSIONS, 1:30 pm – 3:00 pm**

- Operational and Test Range for Launch vehicles, Balloons, Aircraft, and UAV's, Bruce Underwood (NASA Wallops)

- Environmental testing, vibration, acceleration, shock, thermal vacuum, spin balance, etc., Glen Maxfield (Northrop Grumman)
- Magnetic Calibration for vehicles, satellites and payloads, Charles Lankford (Northrop Grumman/Orbital Sciences Corporation)
- Machine Shop and Fabrication Services, Aerospace quality, Tom Connelly (Northrop Grumman)
- Electronic Fabrication Services, Surface Mount Technology, Ball and Grid Array, Pick and Place etc. design & assembly, Harold Cherrix (Northrop Grumman/Orbital Sciences Corp)

For more information on this program please contact Dr. Steve Fritz, at 410-715-4166 or [sfritz@marylandtedco.org](mailto:sfritz@marylandtedco.org)