

0900 - 1015 Military Forum I
Special Operations Forces: Issues, Challenges & Technology Requirements
 Location: Grumman

The Special Operations Forces Forum will feature members of the US Army and US Marine Corps who will highlight the current and future challenges and technology needs in these units and will address questions in a dialogue with the attendees.

1030 - 1145
Advanced Materials and Manufacturing

Location: Redbud

- Manufacturing nanotechnology
- Optical imaging & measurement
- Composites
- Protective coatings
- Advanced semiconductors & EMI shielding

1030 - 1145
Bio-Medical Technologies

Location: Grumman

- Treatment, devices, traumatic injury response management
- Cost-effective automation solutions for complex bioassay workflows and medical countermeasures
- Toxic effects of nerve agents

1030 - 1145
Fuels & Power Technologies

Location: Dogwood

- Small-scale solutions
- Next wave of capabilities from evolution to current approaches to a new generation of power sources

1330 - 1500 Military and Government Forum II
Conventional Forces, Installations and Agencies: Issues, Challenges and Technology Requirements
 Location: Grumman

Military and Government Forum II will feature members of all the services and key agencies within North Carolina: US Army, US Navy, US Marine Corps, US Air Force, US Coast Guard, Corps of Engineers, Army Research Office, Veterans Affairs and the National Institute of Environmental Health Sciences. The panelists will address tactical, agency and installation-focused issues and technology needs, and will answer questions from Symposium attendees.

1515 - 1630
Information Technology (Modeling and Simulation)

Location: Redbud

- New developments in software tools, biomedical, custom communications devices, training technologies, logistics, RFID calibration, authentication coding and simulation environments

1515 - 1630
Automotive and Robotics Technologies

Location: Grumman

- R&D advances
- Electric vehicles
- Advanced testing techniques
- Advanced suspension systems
- New piston engine techniques
- New hitch and rescue products for the market

1515 - 1630
Behavioral Sciences Technologies

Location: Dogwood

- Advances in understanding the how and why of human behavior
- New techniques in early identification of abnormal behavior
- Advanced techniques and technologies in communication and understanding

1030 - 1145 **Advanced Materials and Manufacturing**

Location: Redbud

Chair: Dr. Michael Steer, North Carolina State University
Lampe Distinguished Professor of Electrical and Computer Engineering

Panelists from 10 different organizations will present exciting breakthrough technology advances in such areas as manufacturing nanotechnology, optical imaging and measurement, composites, protective coatings, advanced semiconductors and EMI shielding.



Dr. Michael Steer (NCSU) manages NCSU's Electronic Research Laboratory which has over \$7M of RF and Microwave measurement, characterization and prototyping equipment. It is one of the top four academic labs in the world for RF measurements with good coverage up to 110+ GHz. Limited measurements can be made to 330 GHz. In 2009, he received the "Commander's Award for Public Service" from the Commanding General of the U.S. Army Research, Development and Engineering Command (RDECOM).



Dr. Jim Ryan (UNC-G) is the founding dean of the Joint School of Nanoscience and Nanoengineering (JSNN) located in a 105,000 square foot facility at Gateway University Research Park. JSNN is developing materials and device technologies for defense applications including development of ultra-strong non-crimped carbon fiber composites, electro-spun glass nanofibers to enhance composite strength, thin film technologies for flexible displays and infrared optics, computational nanotechnology and a diagnostic device for battlefield detection of traumatic brain injury.



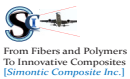
International Technology Center is a non-profit research corporation which focuses on DoD related areas of interest. Programs at ITC managed by Dr. Gary E. McGuire include nanomaterials, atmospheric pressure plasma systems, thermal interface materials, and custom integrated circuits. The nanomaterials are utilized in a wide range of polymer composites.



JP Optical Consulting, Inc. (Chapel Hill, NC) has 30 years of Custom Leitz & Zeiss Optical Microscopy experience. Training, Service - all brands. Kramer FBS-10-DIC developed from special project for Biogen Idec - RTP. DIC micro contrast in macro range, w/long distance objs. for high res. digital imaging. jpoptical@nc.rr.com 919-740-0517



Kyma Technologies, Inc. is active in specialty electric switch and chemical sensor technology which could potentially benefit several defense applications. Keith Evans, president of Kyma Technologies of Raleigh, NC, will present Kyma's progress in the development of novel crystalline materials for more efficient lighting and electric power management everywhere.



Simontic Composite Inc. is a composite research and manufacturing company. Our specialty is an innovative composite design, analysis, testing and manufacturing for commercial and military applications. Participating on this panel is Dr. Simon Senibi, PhD Mechanical Engineering NC State and President Simontic Composite with over 18 years of Aerospace Composite experience.



United Protective Technologies, LLC is a small business located in Locust, NC specializing in protective coatings for corrosion and wear resistance. Our Velox™ superhydrophobic eliminate surfaces from being wetted, preventing corrosion and biofouling. Peter Venema, a Chemical Engineer from NC State, will be presenting on this technology.



Kirkco Corporation engineers systems for processing / production of multiple component composite materials: metered, mixed, and dispense precision; turnkey systems for composite applications to combine resins with glass, carbon, Kevlar fibers to produce extremely light / strong composite materials; high-and low-pressure, resin metering equipment used for manufacturing process capable of automation.



LORD Corporation is a diversified technology company. Participating on this panel from LORD is Ross Zambanini, who is responsible for strategy and commercialization of aerospace and defense initiatives at LORD Corporation. He holds a B.S. in Marketing and a B.S. in International Business from Penn State University, a MBA from The University of Massachusetts, and certification in Business & Language from Universidad San Pablo de Olavide in Seville, Spain.



RTI International Engineering and Technology Unit concentrates on electromagnetic sensor elements and systems, measurement and signature intelligence, and unintended signal exploitation. Dr. Mark Roberson is Senior Technical Director for Defense Programs will participate on this panel and his clients include government and commercial organizations.

NOTES

1030 - 1145

Bio-Medical Technologies

Location: Grumman

Chair: Dr. Steve Soper, University of North Carolina at Chapel Hill
Professor of Chemistry and Professor of Biomedical Engineering

Advancements in the biomedical field are strongly led by NC organizations and this panel features the newest technology from 12 presenters. Exciting advancements in diagnosis, treatment, devices, traumatic injury response management as well as cost-effective automation solutions for complex bioassay workflows and medical countermeasures to the toxic effects of nerve agents will be discussed.



Dr. Steve Soper (UNC-CH) works in a lab that develops Micro- and Nanofabricated Tools for Biological Discovery and Medical Diagnostics. The major focus of his group is to generate new tools for discovery and medical diagnostics through the analysis of biological macromolecules including DNAs, RNAs and proteins. These tools cover a diverse range of activities, such as the generation of new reagents, novel assays and methodologies, and hardware innovations across various length scales (millimeter to nanometer).



Dr. Veena Misra (NCSU) conducts research in III-As and III-N based devices, atomic layer deposition, nanoparticles for memory and energy storage, high-K and metal gates, organic photovoltaics and solar fuels. Some of her more recent work is directed toward biomedical applications such as self-powered, integrated sensor technologies.



Advanced Liquid Logic is committed to the development of cost-effective automation solutions for complex bioassays. Our proprietary digital microfluidics technology is enabling fieldable medical diagnostics, transforming pathogen ID for biodefense, improving human ID and profiling for forensics/biometrics/intelligence and automating sample prep for DNA sequencing (NGS).



BioMedica USA, LLC is a privately owned company focused on bio-science R&D and diagnostics product development. Its mission is to provide rapid diagnostic systems with advanced technology for global healthcare market. Its vision is to bring innovation to commercialization through collaborative research and development.



Countervail Corporation is engaged in developing medical countermeasures to chemical and biological threats to military and civilian populations. Our current technology focus is targeted toward developing a drug for use as an antidote to the toxic effects of nerve agent exposure.



DosePoint Inc. has developed a pocket sized, programmable, biometrically secured medication dispenser. The dispenser, named Aria, can be programmed remotely using an embedded cell module and can notify caregivers about missed doses or tampering. Aria records dispensing time and controls dosing to prevent overdose, sharing, or other misuse. www.dosepoint.com



Dry Corp, LLC manufactures USA made waterproof wound care products for casting, surgeries, IV PICC lines, ostomies and amputees. The patented pump creates a waterproof vacuum seal to improve patient's quality of care by keeping their wounds clean and dry, to improve infection control and to enhance recuperation in therapy/water activity.



Entegriion Inc. is developing a portable coagulation measurement device for use in field settings, as well as developing techniques for spray drying solvent-detergent treated plasma and freeze drying platelets, reducing cold chain storage requirements for blood products and improving blood product safety.



Humacyte, Inc. is a medical discovery and development regenerative medicine company with pre-clinical stage products located in RTP, NC. Our lead product is a tissue-engineered vascular graft, and represents a first application of our novel, patent-protected technology platform for engineering acellular human tissues.



Novan Therapeutics, Inc. was founded in 2006 to commercialize chemical strategies that unlock the therapeutic potential of nitric oxide. As a privately held, development stage-company, Novan's current strategy is to clinically evaluate nitric oxide-based therapeutics in targeted areas of unmet medical need.

Maverick Enterprises is a consulting/distribution business that provides biodegradable plastic film and thermoformed products made to the customer's specifications. Products can be recycled, buried in the soil, composted, or thrown away in the garbage and ultimately into landfills. Participating on this panel from Maverick Enterprises, is Leslie Harty, President of the company.



TIRF Technologies (www.tirftechnologies.com) has developed advanced biodetection technology, which is well-suited for rapid and accurate molecular diagnostics. We are currently marketing analytical grade and portable TIRF biosensors. Our TIRF accessories for microscopy and spectroscopy have established themselves as powerful tools for life science studies.

NOTES

The above information was provided by panel members and was printed by the NCMBC unedited and unabridged. The NCMBC does not officially endorse any company or organization listed. These items are made available strictly for the information and convenience of event attendees to facilitate discussion on forum topics.

North Carolina Federal
Advanced Technologies
Symposium

1030 - 1145 Fuels & Power Technologies

Location: Dogwood

Chair: Dr. Johan Enslin, University of North Carolina at Charlotte

Director of the Energy Production & Infrastructure Center (EPIC) at UNC Charlotte
Distinguished Chair in Power Engineering Systems

The advances in this area are nothing short of amazing. With an emphasis on small-scale solutions, this must attend panel of 9 will present the next wave of capabilities with break through evolution to current approaches to a new generation of power sources.



Dr. Johan Enslin (UNC-C) Dr. Enslin is a veteran in transmission and distribution planning, wind and solar renewable integration, FACTS, HVDC, Distributed Power and Energy Storage. He has held faculty positions in the U.S. and South Africa, and served in leadership positions in industry including as CTO at Petra Solar. He holds 14 patents.



8 Rivers Capital - NET Power, with leading US energy companies, is developing a new power plant technology, with a 25MW demonstration in 2013-14. NET Power is more efficient, cheaper, and cleaner than any existing technology. NET Power will enable distributed, transportable, and mobile power that uses less fuel and produces far less pollution.



Calor Energy and partner Mabel Systems offer a waste-to-energy thermal converter capable of creating 1 MW per unit—fully scalable to a large number of units—from almost any solid waste (packaging, trash, wood). Rich Deming, senior partner at Calor Energy, advises private and public clients on energy issues and develops clean technology projects.



Maverick Biofuels, Inc. was founded to commercialize a patent-pending process for producing mixed-alcohol biofuels. This mixed-alcohol biofuel can be used as a gasoline replacement fuel in flexible fuel engines or blended with gasoline similar to ethanol. Maverick's mixed-alcohol biofuel can be produced using non-edible feedstocks such as municipal solid waste, purpose-grown feedstocks, and biomass waste (crop, animal, timber, etc.), as well as other feedstocks such as natural gas and coal. In addition, Maverick's process can be used to produce other end-products, such as plastics or jet fuel.



Ovation Biotech, Inc is an early stage biotechnology company that has developed a fuel refining process that converts any animal fat or plant oil to a wide range of fuels including military spec jet fuel, green diesel and gasoline, high value renewable chemicals, solvents and lubricants.



ParaSol Technologies is revolutionary electricity producing solar fabric that can be used to manufacture tents and produce enough electricity to meet approximately 20% of a forward operating base's (FOB's) electrical needs, thus reducing the fuel consumption. The technology can be used just like current fabric, maintaining the durability, strength and flexibility of existing material. ParaSol solar fabric is also applicable to military uniforms, awnings, etc.



Piedmont Biofuels is a BQ-9000 accredited NC biodiesel production facility that utilizes used fats and oils to manufacture biodiesel. Research Director/Co-founder, Rachel Burton will be speaking on Piedmont's new zero-waste production technology which utilizes enzymes to recycle low value greases into a clean renewable diesel fuel.



SBM Solar Inc. is developing better polymers for solar applications that will allow greater sunlight absorption and boast higher efficiencies. The new panel will be lightweight, shatterproof, and integrate parts for easier field interconnection. This will lower material and production costs and make U.S. made non-glass panels more accessible for commercial use.



Verdante BioEnergy provides core bioenergy services securing feedstocks, distribution and marketing of biomass products, and developing solutions and innovation for clients. Our business is relationships. We align with firms to deliver shared rewards for fair compensation tied directly to results. Above all else, Verdanté fosters reliability in the business of bioenergy.

NOTES

The above information was provided by panel members and was printed by the NCMB unedited and unabridged. The NCMB does not officially endorse any company or organization listed. These items are made available strictly for the information and convenience of event attendees to facilitate discussion on forum topics.



1515 - 1630

Information Technology (Modeling and Simulation)

Location: Dogwood

Chair: Dr. R. Michael Young, North Carolina State University
Associate Professor of Computer Science

IT is everywhere in our world and these 11 organizations will cover new developments in software tools, biomedical, custom communications devices, training technologies, logistics, RFID calibration, authentication coding and simulation environments.



Dr. R. Michael Young (NCSU) is a professor of computer science at North Carolina State University, where he is the founder and co-director of the NCSU Digital Games Research Center. His work focuses on the modeling of adaptive stories in games. He teaches courses on game design and development and interactive narrative.



Dr. Karl Ricanek (UNC-W) conducts research mainly focused in developing algorithms for modeling age-progression for the mitigation of severe performance degradation of face recognition technology due to aging. He has also been involved in research for robust age-estimation from facial images and for gender and race classification from facial images.



Health Information Executive Technology Consulting (HITEC) is a vendor-neutral, minority and veteran owned business & technology consulting company. HITEC is developing a global Remote Physiological Monitoring solution with a component-based architecture, delivered in a cloud-based "Software as a Service" (SaaS) offering.



RTI International are industry leaders in advanced technology and research and development. Randy Eckhoff is an accomplished enterprise architect with over 25 years' experience in a wide range of fields developing desktop applications, large-scale web applications, and mobile applications. Randy will talk about the Personal Health Intervention Tool which supports prevention of psychological health problems through mobile health assessment and SHIs.



North Carolina Partnership for Defense Innovation (NCPDI) designs develops and delivers advanced technologies with applications in defense and security. As a R&D organization, PDI drives cross-cutting design and rapid technology maturation in these fields for a diverse client base encompassing military, intelligence community, US Government & commercial clients.



IEM is a global security consulting firm that specializes in developing innovative solutions for government agencies. IEM's VP of Response and Defense, Major General Richard Rowe, U.S. Army (Ret.), is highlighting IEM's work developing technology that provides intelligence analysts with a richer understanding of activities observed by UAVs and surveillance cameras.



TheraSim, Inc. is a virtual medical simulation company. For the past 8 years, TheraSim virtual patient technology has let users make relevant, realistic clinical decisions with an AI that knows millions of clinical rules. Administrators can access aggregate metrics to track performance. David Hadden is the CEO & founder of TheraSim will participate on this panel. www.therasim.com



CertiRx Corporation provides innovative solutions for linking digital security to physical products. We make this link on any product with a printable surface. For documents that transit in and out of digital systems, we can verify content and manage chain of custody of printouts and images. Our solution extends to anticounterfeiting and track & trace security.



Montie Design
www.montie.com

Montie Design/Montie Gear provides concept-to-marketplace product commercialization and product development services. Working as partners to our clients, we integrate mechanical engineering, our machine shop and industrial design to bring about products that balance performance, aesthetics, and cost. Call today at 1-800-722-7987 and let us bring out the innovator in you!



SMARTRAC Technology Group is the leading developer, manufacturer, and supplier of RFID and NFC transponders and inlays. The company produces ready-made and customized transponders and inlays used in fields of application such as electronic identification, public transport, access control, RFID-based car immobilizers, animal identification, libraries, industry, and logistics.



Epic Games, Inc. creates cutting-edge games and game technology. Epic is behind the billion-dollar "Gears of War" franchise and the top-grossing "Infinity Blade" series for iOS. Epic's Unreal Engine, which is used to create software entertainment, 3D visualizations, training simulations and film, has won more than 25 top industry awards. Visit us at www.epicgames.com

NOTES

1515 - 1630 Automotive and Robotics Technologies

Location: Grumman

Chair: Major General (Ret) Julian "JB" Burns, Vice President of Defense Affairs
BAE Systems (USA)

Long a leader in automotive technologies, North Carolina is represented by 9 outstanding organizations featuring R&D advances, electric vehicles, advanced testing techniques, advanced suspension systems, new piston engine techniques and new hitch and rescue products for the market.



MG Julian (JB) H. Burns, VP Defense Affairs in BAE Systems (USA), Washington, DC, oversees markets in the US, Europe and South Africa, with a scope ranging from guns to tactical vehicles. Maj Gen Burns, a graduate of the United States Military Academy, served over 30 years in the United States Army being stationed within the US to the Arabian Peninsula.



Dr. Jing Xiao (UNC-C) is a member of UNC Charlotte's College of Computing & Informatics. The College of Computing & Informatics has 100 faculty and staff members, 1300 students including 130 Ph.D. students, 3 Departments (Computer Science, Software and Information Systems, Bioinformatics and Genomics), 6 research and education centers and institutes, 8 degree programs at Bachelor, Master's and Ph.D. levels, and \$35 million in active research funding.



LORD Corporation provides advanced adaptive magnetically-responsive suspension systems for use in military ground vehicles that offer 20-50% improvement in combat mission effectiveness. James Yakel, Business Development Manager for LORD, has over 30 years of Military Vehicle experience with the US Army and multiple primes.



CAMBER RIDGE, LLC

Camber Ridge, LLC has developed a new concept in testing tires to improve safety and performance, increase fuel efficiency, and reduce vehicle development costs. The world's first system for heavy-duty applications is being built under a grant from the Army. James Cuttino, President, will describe the project and its impact on the military and commercial trucking industries.



Daheco Engines Corporation, Valdese, NC, 828-874-1477 is represented by CEO / President, W. Daniel Hamby, a 30 year veteran of innovation. Daheco is presenting & demonstrating its constant-volume piston-dwelling piston engine technology that offers a multifold increase in engine efficiency of internal & external combustion engines.



Institute for Defense and Business (IDB) is a 501(c)(3) N.C. non-profit research and education institute established by the NC Governor and UNC Chapel Hill which fosters shoulder-to-shoulder educational exchanges among the DoD, other government agencies and the private sector to achieve excellence and innovation. Serving on the panel from Institute for Defense and Business is Ted A. Brewer is the Senior Vice President.



Vision Motor Cars, Inc. is a Veteran-owned corporation designing and manufacturing affordable light electric trucks. VMC vehicles are DOT approved, have a 1,000 pound payload, and can travel up to 100 miles between charges; rechargeable at any electrical outlet or by using ordinary sunlight. VMC president, Brooks Agnew, is a SixSigma Master Black Belt automotive engineer.



Williams Innovations produces commercial and military TeleSwivel® Proximity Hitches. The hitch is the first innovation in hitch technology in over 80 yrs and solves one of the oldest problems in transportation - how to safely, and quickly, connect a trailer to a vehicle. It saves fuel/maintenance, reduces injuries and avoids costs generally accepted before this innovation.



Ultra International is a thriving precision sheet metal business specializing in armor plate. With have over three decades of combined fabrication and machining experience, Ultra has gained a reputation for quality manufacturing with on-time delivery and professional expertise.

NOTES

The above information was provided by panel members and was printed by the NCMBC unedited and unabridged. The NCMBC does not officially endorse any company or organization listed. These items are made available strictly for the information and convenience of event attendees to facilitate discussion on forum topics.



1515 - 1630

Behavioral Sciences Technologies

Location: Dogwood

Chair: Dr. David Schanzer, Duke University

Associate Professor of the Practice for Public Policy and Co-Director
Institute for Homeland Security Solutions

The 9 panel members will address advances in our understanding of the how and why of human behavior. A range of topics will be discussed, from new techniques in early identification of abnormal behavior to advanced techniques and technologies in communication and understanding.



Dr. David Schanzer (Duke Univ.) research expertise includes counterterrorism law and policy and homeland security. He was appointed to be Director of the Triangle Center on Terrorism and Homeland Security in 2005. He previously served in a variety of positions in the legislative and executive branches of the federal government, including Minority Staff Director of the Committee on Homeland Security, United States House of Representatives and Special Counsel, Office of the General Counsel, United States Department of Defense. Schanzer is an Associate Professor of the Practice at the Duke Sanford School of Public Policy and an Adjunct Professor at the University of North Carolina.



Advanced Computer Learning Company (ACLCLL) is a SDVOSB, SBA 8(a), and NC HUBzone certified company specializes in advanced training and education solutions by leveraging the latest gaming, simulations, mobile and online technologies. Please visit www.goaclc.com for more information.



The James Worthy Foundation works with a wide spectrum of community support partners to develop projects that bring value-added benefits to our holistic quality of life support services for "at-risk" youth, active military and veterans (especially homeless women veterans) and their families, tailored for their unique, "Earned Pathways to Success".



Dr. Stephen Mitroff (Duke Univ.) is an Associate Professor in Duke's Center for Cognitive Neuroscience. With funding from the Army Research Office, the Institute for Homeland Security Solutions, the Department of Homeland Security, and from Nike, Inc., he has focused on improving vision and attention through the study of individual differences. See more at: www.mitrofflab.org



The Forte Institute, LLC - What makes the difference between top performers and others? Is there an evidence based way to discover these strengths, and most importantly, coach that discovery effectively; with measurement? Forté® Founder/Chairman C. D. "Hoop" Morgan, III will review Forté® Performance Coaching and the ease of use of this technology in developing new leadership skills to drive exceptional results.



Dr. Julian Keith (UNC - W) is involved in ongoing studies of the use brainwave (electroencephalogram, EEG) feedback for the enhancement of focused, sustained attention in adults. Dr. Keith will present research demonstrating that brainwave feedback enhances performance across a broad variety of tasks that require focused attention, ranging from target/non-target discrimination to the acquisition of complex cognitive and motor skills.



Valencell, Inc. is a technology development and licensing company headquartered in Raleigh, North Carolina. Valencell is the creator of PerformTek™ biometric technology, which integrates seamlessly within audio headsets and gives audio headsets the ability to monitor the vital signs, health, and fitness of the user. Dr. Steven LeBoeuf is Founder & CEO of Valencell, Inc. will participate on this panel



Insight Management Consulting believes effective communication drives results in organizations. By building skills to hold high stakes, high emotion conversations leaders improve results and build stronger relationships regardless of the message. Based on the best-selling book, *Crucial Conversations*, Scott Rosenke of Insight Management Consulting has taught skills to many Army, Marine Corps and Navy teams.



Triangle BioSystems International is a developer of neurological research equipment for brain and nerve monitoring, recording and stimulation. This advanced neuro-technology hardware and software enables the acquisition of action potential signals (spikes) from individual brain cells (neurons), as well as local field potential (EEG) signals in miniature tethered and wireless subcutaneous packages.

NOTES

The above information was provided by panel members and was printed by the NCMB unedited and unabridged. The NCMB does not officially endorse any company or organization listed. These items are made available strictly for the information and convenience of event attendees to facilitate discussion on forum topics.

North Carolina Federal
Advanced Technologies
Symposium