



CECDNEWS

CENTER FOR ENERGETIC CONCEPTS DEVELOPMENT
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A newsletter for
alumni and friends of
the Center for Energetic
Concepts Development

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Message from the Director



Prof. DK Anand

2007 was an exceptionally busy year at CECD with numerous changes. Two new faculty members, Dr. James Short and Dr. Millard Firebaugh, joined the CECD team in September. Dr. Short is Visiting Professor and full-time Deputy Director of CECD and

Dr. Firebaugh is Professor of Practice. Both bring a wealth of experience and expertise in the area of national defense and organizational leadership to CECD/ETC and will assist the centers in developing new directions to accomplish their mission. They will also assist in further developing the CECD graduate energetics curriculum and its graduate program.

On the research arena, CECD held a formal research review meeting in October. The purpose of the meeting was to report on and review the status of current CECD research projects and to allocate further funding from the CECD's \$2.6M research budget. Presentation topics included: green manufacturing and prognostics; insensitive munitions; sensors; training in virtual environments; logistics; port safety; underwater mine neutralization; and explosives laboratory research. Work in these areas is currently supported by CECD.

From Science to Seapower, a book written by the CECD/ETC team-Mr. Robert Kavetsky, Prof. DK Anand, and Mr. Michael Marshall saw its second printing in 2007. The book discusses DOD's in-

house science and technology enterprise and offers recommendations that could help reverse disturbing trends and address some of the underlying causes of long-term problems.

Funding for CECD energetics research continued to be solid in 2007. We received \$1M from NSWC Indian Head, \$225K from Charles County and \$2.6M from ONR.

CECD conceived the Energetics Technology Center (ETC) as an expansion of its work in energetics research and as an economic engine for Indian Head. Consequently, ETC's growth is closely tied to CECD's mission. 2007 was a milestone for ETC as well. In October, ETC welcomed its first permanent Executive Director, Mr. Robert Kavetsky, while Dr. Richard Nadolink moved from his capacity as the ETC's interim Director to become its Chief Technology Officer. ETC has established a state-of-the-art Virtual Reality Laboratory for continuing R&D in cooperation with CECD and other potential partners. ETC now has four full-time engineers, a senior scientist, three consultants, and an office manager.

In December, CECD in partnership with ETC and Port Tobacco Consulting LLC, finished its work developing design requirements for the new ETC building in Southern Maryland. This project was supported by funds provided by HUD through the Charles County Economic Development Commission. A final report including the team's recommendations was submitted to the Charles County Economic Development Director.

To learn more about CECD, please visit our website at www.cecd.umd.edu.

What's New

CECD Welcomes Dr. Millard Firebaugh as a Professor of Practice



Dr. Millard Firebaugh

CECD is pleased to announce that Dr. Millard Firebaugh has joined CECD as Minta Martin Professor of Practice. Dr. Firebaugh was President and Chief Operating Officer of SatCon Technology Corporation from 2005 to 2006. Before his time with SatCon, he worked with the Electric Boat Corporation, a division of General Dynamics Corporation, where he served as Vice President of Innovation and Chief Engineer, and was responsible for the operations of a 2,800 person nuclear submarine design and engineering group. Rear Admiral Firebaugh served for more than 33 years in the U.S. Navy, retiring in 1995 as the Deputy Commander for Engineering and Chief Engineer for Naval Sea Systems Command.

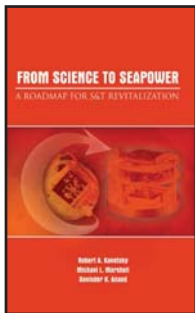
CECD Welcomes a Full-Time Deputy Director, Dr. James Short



Dr. James Short

Dr. James Short has served as the CECD Deputy Director since 1998 in addition to his duties while with the Office of the Deputy Under Secretary of Defense for Laboratories and Basic Sciences as Director of Defense Laboratory Programs and Acting Director of Basic Research. Following his retirement from DOD in August of 2007, Dr. Short has taken full-time leadership of the planning, coordinating, and chairing of symposia and/or international conferences in the general area of energetics for CECD and ETC. Dr. Short received his Ph.D. in Mechanical Engineering (combustion theory and reactive gas dynamics) from the University of California, Berkeley.

New CECD Book: *From Science to Seapower*



"The effectiveness of the war-fighting systems employed by the Navy and Marine Corps of the Future depends as much on investment in these dedicated, capable civil servants as it does on the size of the science and technology budget. The past decade's frequent downsizings, coupled with the declining number of American students-particularly women and minorities, pursuing mathematics, engineering and physical science degrees-has left us with a dwindling pool of scientists and engineers available to become the next generation of researchers. This situation jeopardizes our ability to perform essential research in support of, ultimately, Sailors and Marines." These observations were made by Rear Admiral Jay Cohen, the Chief of Naval Research in his congressional testimony of March 2003.

From Science to Seapower (ISBN 0-9777295-0-8), a book written by the CECD/ETC team-Mr. Robert Kavetsky, Prof. DK Anand, and Mr. Michael Marshall describes the nature and extent of these and some other major threats to the vitality of DOD's in-house science and technology (S&T) enterprise, and offers recommendations that could help reverse the most disturbing trends and address some of the underlying causes of long-term problems. It synthesizes a wide-ranging array of literature on a variety of workforce, funding, and S&T innovation topics.

To request a complimentary copy of this book, contact Ania Picard at picard@cecd.umd.edu.



Dr. Gregory Jackson

CECD Faculty Spotlight

Dr. Gregory Jackson

Dr. Jackson is an Associate Professor at the University of Maryland, where he has been a faculty member since 1997. He works within the Center for Environmental Energy Engineering (CEEE) and is affiliated with the Center for Energetic Concepts Development (CECD) in the Department of Mechanical Engineering. Dr. Jackson is known for developing novel catalytic reactors for ignition and low-NO_x combustion.

Dr. Jackson's research group pursues fundamental research in fuel cells, catalysis, and combustion. Their current efforts include a collaboration with Ballard Power Systems to integrate liquid fuel processing with a low-temperature proton exchange membrane (PEM) fuel cell stack for portable power generation applications. The group also performs research in solid oxide fuel cells (SOFCs) to assess the ability of SOFCs to operate on fuels other than hydrogen. His work in combustion within the CECD is in collaboration with Dr. Arnaud Trouve from the University of Maryland and senior engineers from NSWC-Indian Head. This work has focused on the development and validation of models for large-scale chemical releases and subsequent fire and/or detonation scenarios.

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CECD/ETC News Flash

<http://www.etcmd.org/>

Conceived by CECD as part of its Southern Maryland Initiative for Energetic Capability Development, the Energetics Technology Center (ETC) represents an extension and expansion of the CECD's current mission. ETC's activities are focused on three key areas: energetics technology development, workforce development, and policy and strategic planning. The vision of the ETC is to act as a catalyst for energetics R&D in collaboration with its partners.

ETC Appoints New Executive Director



Mr. Robert Kavetsky

Effective October 1, 2007, Mr. Robert Kavetsky is the Executive Director for the ETC. Prior to joining the ETC, Mr. Kavetsky served as the Director of the National Defense Education Program at DDR&E, reporting to the Deputy Undersecretary for Labs and Basic Sciences, where he was responsible for the development and execution of a critical DoD workforce development initiative. Dr. Richard Nadolink, who was serving as the interim Executive Director, is now the ETC's Chief Technology Officer. He leads the development of science and engineering projects for the ETC.

CECD's Report on Design Requirements for the New ETC Building

In 2006, CECD was awarded a \$248K HUD-Charles County contract to develop conceptual design requirements for the new ETC building. Recently, a team headed by Dr. SK Gupta from CECD and consisting of other CECD faculty and senior engineers from ETC, Port Tobacco Consulting LLC, Corporate Office Properties Trust Development and Construction, and Facchina completed and submitted a CECD report on those design requirements to Charles County. The new ETC building will be located in the Charles County Technology Park on Bryans Rd and is expected to attract enterprises and research programs focused on energetics applications for both military and commercial utility.

The Center for Energetic Concepts Development (CECD), established in 1998 at the University of Maryland, College Park, is a cooperative research, technology transfer, product development, and S&T training alliance between the Indian Head Division Naval Surface Warfare Center (IHDIV/NSWC) and the University of Maryland. CECD is concerned with the science and manufacturing of energetic materials and products for national defense and security, and with training the next generation of scientists and engineers working in energetics.

CECD NEWS is published twice a year for alumni and friends of the Center for Energetic Concepts Development at the A. James Clark School of Engineering, University of Maryland, College Park.

CECD alumni news and comments are welcome. Please send them to:

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