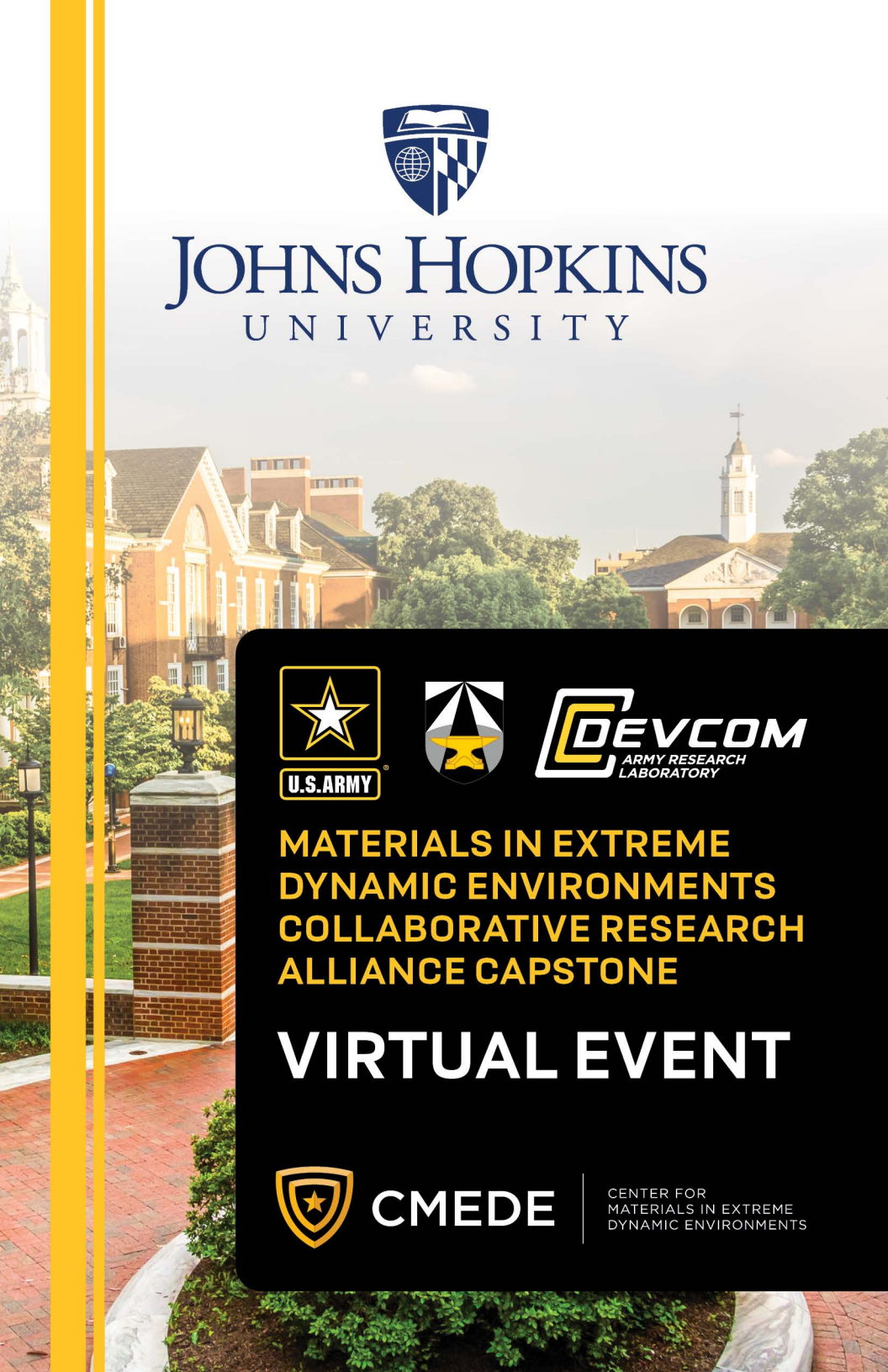

JOHNS HOPKINS
UNIVERSITY
U.S.ARMY
DEVCOM
ARMY RESEARCH
LABORATORY
MATERIALS IN EXTREME
DYNAMIC ENVIRONMENTS
COLLABORATIVE RESEARCH
ALLIANCE CAPSTONE
VIRTUAL EVENT
CMEDE
CENTER FOR
MATERIALS IN EXTREME
DYNAMIC ENVIRONMENTS

MATERIALS IN EXTREME DYNAMIC ENVIRONMENTS COLLABORATIVE RESEARCH ALLIANCE (MEDE CRA) CAPSTONE AGENDA

THURSDAY, JANUARY 20, 2022

MAIN SESSION

Time (ET)	Topic / Presenter
1:00-1:10	Welcome Prof. Lori Graham-Brady / Dr. Sikhanda Satapathy
1:10-1:20	Remarks from President, Johns Hopkins University President Ron Daniels
1:20-1:30	Remarks from Director, DEVCOM Army Research Laboratory Dr. Patrick Baker
1:30-1:45	Remarks from Maryland Congressional Delegation Senator Ben Cardin / Senator Chris Van Hollen
1.45-2:15	MEDE research overview Prof. Lori Graham-Brady / Dr. Sikhanda Satapathy
2:15-2:35	Keynote speaker: Commanding General, US Army Combat Capabilities Development Command (DEVCOM) Maj. Gen. Edmond "Miles" Brown
2:35-2:55	MEDE collaboration overview Prof. Lori Graham-Brady / Dr. Sikhanda Satapathy
2:55-3:15	Keynote speaker: Director, Hopkins Extreme Materials Institute Prof. K.T. Ramesh
3:15-3:30	Acknowledgements and introduction to poster and exhibition Prof. Lori Graham-Brady / Mr. Jay Gould/Ms. Bess Bieluczyk

POSTER AND EXHIBITION SESSION

3:30-5:00	Poster and exhibition session

MAIN SESSION

5:00-5:15	Closing Prof. Lori Graham-Brady/Dr. Sikhanda Satapathy
5:15	Event concludes

DR. PATRICK J. BAKER

DIRECTOR
DEVCOM ARMY RESEARCH LABORATORY

Dr. Patrick J. Baker was selected for the Senior Executive Service in May 2012. In his current position, he serves as the Director of the U.S. Combat Capabilities Development Command (DEVCOM), Army Research Laboratory (ARL), and the Army's premier laboratory for basic and applied research. ARL conducts research in weapons and materials, sensors and electron devices, computational and information sciences, human research and engineering, and vehicle technology. ARL's Army Research Office executes the Army extramural basic research program in scientific and engineering disciplines. The Laboratory consists of approximately 2,000 civilian and military employees with an annual budget of over $1 billion.

CAREER CHRONOLOGY:

- December 2019 – Present: Director, DEVCOM Army Research Laboratory
- October 2019 – December 2019 Executive Technical Director, Data and Analysis Center
- February 2019 – October 2019: Director, Survivability Human Systems Integration Directorate, Data and Analysis Center
- August 2015 – February 2019: Director, Survivability Lethality Analysis Directorate, Army Research Laboratory, RDECOM, AMC
- May 2012 –August 2015: Director, Weapons and Materials Research Directorate, Army Research Laboratory, RDECOM, AMC
- Oct 2014 – Mar 2015: Acting Director, Natick Soldier Research Development and Engineering Center, RDECOM, AMC
- Dec 2009 – May 2012: Chief, Protection Division, ARL, RDECOM, AMC
- Dec 2006 – Dec 2009: Chief, Terminal Effects Division, ARL, RDECOM, AMC
- Dec 2001 – Dec 2006: Chief, Explosives Technology Branch, ARL
- Apr 1995 – Dec 2001: Mechanical Engineer, ARL
- Jan 1993 – Apr 1995: Associate Research Engineer, University of Dayton Research Institute, Dayton, OH
- June 1988 – Apr 1989: Mechanical Engineer, U.S. Army Ballistic Research Laboratory
- July 1984 – Sep 1987: Engineering Trainee, U.S. Army Ballistic Research Laboratory

RONALD J. DANIELS

PRESIDENT
JOHNS HOPKINS UNIVERSITY

Ronald J. Daniels has served as the 14th president of Johns Hopkins University since 2009. Before coming to Johns Hopkins, he was provost and professor of law at the University of Pennsylvania and dean and James M. Tory Professor of Law at the University of Toronto. A law and economics scholar, he is the author of the recently published What Universities Owe Democracy, and co-author of books and scholarly articles on the intersections of law, economics, development, and public policy in areas such as corporate and securities law, social and economic regulation, and the role of law and legal institutions in promoting third-world development. Daniels is a fellow of the American Academy of Arts & Sciences and the American Philosophical Society. He received a Carnegie Corporation of New York Academic Leadership Award in 2015 and was named a member of the Order of Canada in 2016. Daniels earned a BA and a JD from the University of Toronto and an LLM from Yale University.

DR. SIKHANDA SATAPATHY

COLLABORATIVE ALLIANCE MANAGER
MEDE CRA

Dr. Satapathy leads basic and applied research in the Soldier Protection Sciences area at the Army Research Laboratory in the US Army's Combat Capability Development Command. Prior to joining ARL, he led electrodynamics and penetration mechanics research efforts at the Institute for Advanced Technology at the University of Texas at Austin for 15 years, initially as a Group Leader and later as Associate Director. His research interests include high-rate response of materials, penetration mechanics, shock physics, injury biomechanics, and electromagnetic launch.

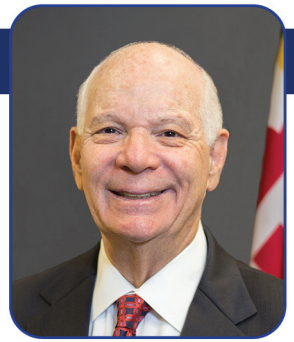
Dr. Satapathy received his bachelor's degree from Birla Institute of Technology and Science, India in 1987, his master's from the University of Missouri-Columbia in 1993, and his PhD from the University of Texas at Austin in 1997. He received the Peter Mark Medal from the IEEE Electromagnetic Launch Society in 2012, and is a fellow of the American Society of Mechanical Engineers.

PROF. LORI GRAHAM-BRADY

DIRECTOR, CMEDE
JOHNS HOPKINS UNIVERSITY

Lori Graham-Brady, professor of civil and systems engineering and associate director of the Hopkins Extreme Materials Institute (HEMI), one of Johns Hopkins University's premier research institutes, is a leading global researcher in the field of computational stochastic mechanics, applications of machine learning and AI to materials design and analysis, multiscale modeling of materials with random microstructure, and the mechanics of failure under high-rate loading. She has secondary appointments in mechanical engineering and materials science and engineering.

Graham-Brady's research provides critical computational modeling needed to understand the connections between material-scale uncertainties and the reliability of structures. Her work in direct government and the industrial application includes the development of a collaborative program funded by and in partnership with the Army Research Laboratory for implementing multiscale modeling and design of materials for extreme dynamic environments, in particular designing ceramics and composites for armor applications. Graham-Brady has also developed simulation tools for industry, to help characterize materials with complex microstructure. Additional research in reducing defense threats and improving global security and safety include a project to model material fragmentation that will help characterize the debris that arises from very high-rate events such as nuclear blast.



BEN CARDIN

U.S. SENATOR
MARYLAND

First elected to the Senate in 2006, Senator Ben Cardin currently serves as Chair of the Small Business & Entrepreneurship Committee. He is a senior member of the Senate Foreign Relations, Finance, and Environment & Public Works committees.

Senator Cardin has a deep interest in foreign affairs and has worked across party lines to further our national security and protect universal human rights. He has been a Commissioner on the U.S. Helsinki Commission since 1993, serving as Chairman of the Commission in the current 117th, as well as the 113th and 111th Congresses. In 2015, he was named as the Special Representative on Anti-Semitism, Racism, and Intolerance for the 57-nation Organization Security and Cooperation in Europe (OSCE) Parliamentary Assembly. Senator Cardin serves as a member of the Foreign Relations Western Hemisphere, Transnational Crime, Civilian Security, Democracy, Human Rights, and Global Women's Issues. He previously has served as the Ranking Member of the SFRC East Asia, the Pacific, and International Cybersecurity Policy Subcommittee, and he is the former Chairman of the International Development and Foreign Assistance Subcommittee.

From 1987-2006, Ben Cardin represented Maryland's Third Congressional District in the U.S. House of Representatives and served for 17 years on the Ways & Means Committee. He was a member of the Maryland House of Delegates from 1967-1986.

CHRIS VAN HOLLEN

U.S. SENATOR
MARYLAND

Elected to the United States Senate by the people of Maryland in November 2016, Chris Van Hollen is committed to fighting every day to ensure that our state and our country live up to their full promise of equal rights, equal justice, and equal opportunity.

Senator Van Hollen started his time in public service as a member of the Maryland State Legislature, where he became known as a tenacious advocate for everyday Marylanders and someone who was unafraid to take on powerful special interests on behalf of working people. In 2002, he was elected to represent Maryland's 8th Congressional District. In the House of Representatives, he served as a member of the Democratic leadership and was elected by his colleagues to be the Ranking Member of the House Budget Committee and protect vital interests like Social Security and Medicare.

Senator Van Hollen is proud to have worked successfully with members of both parties to pass bipartisan legislation whenever possible on issues of common concern, including expanding medical research, protecting the Chesapeake Bay, fighting childhood cancer, and passing the ABLE Act to assist families with children with disabilities.

MAJ. GEN. EDMOND 'MILES' BROWN

COMMANDING GENERAL
DEVCOM

Maj. Gen. Miles Brown assumed command of the U.S. Army Combat Capabilities Development Command (DEVCOM) on July 9, 2021. As DEVCOM's Commanding General, Brown leads a world-class team of science and technology experts fully focused on empowering the future American Soldier with advanced Army capabilities made possible by cutting-edge technology forecasting, research and development.

Brown is a native of Honea Path, South Carolina and was commissioned as a Field Artillery Officer from The Citadel.

He has served in Korea, Kuwait, Iraq, and Afghanistan with stateside duty at Fort Stewart (Georgia); Fort Hood (Texas); Fort Riley (Kansas); Fort Carson (Colorado); Fort Eustis (Virginia); and Washington, DC. His staff and joint assignments include Aide-de-Camp to the Commander, Multi-National Force-Iraq; Chief of Staff, 4th Infantry Division; Deputy Commanding General Support, 1st Cavalry Division; and Deputy Director/Chief of Staff, Futures and Concepts Center, U.S. Army Futures Command.

Brown's commands include an Artillery Battalion in Iraq, a Brigade Combat Team in Kuwait, and the Train, Advise, Assist Command-South (TAAC-S) in Afghanistan. He has served eight tours in South Asia during Operations Desert Fox, Intrinsic Action, Desert Spring, Iraqi Freedom, New Dawn, Spartan Shield, Eager Lion and Resolute Support.

He is a graduate of the Field Artillery Officer Basic Course, the Armor Captains Career Course, the U.S. Army Command and General Staff College, and the National War College. His civilian education includes degrees in history, administration and national security strategy from Central Michigan University and National Defense University.

His awards and decorations include the Defense Superior Service Medal (with Oak Leaf Cluster), the Bronze Star Medal (with 2 Oak Leaf Clusters), the Iraqi and Afghanistan Campaign Medals, the Combat Action Badge and the Presidential Service Badge.

Brown is married with two children.

PROF. K.T. RAMESH

DIRECTOR
HOPKINS EXTREME MATERIALS INSTITUTE

K.T. Ramesh, the Alonzo G. Decker Jr. Professor of Science and Engineering at Johns Hopkins, is known for research in impact physics and the failure of materials under extreme conditions. Ramesh also is a professor of Mechanical Engineering, and holds joint appointments in the Department of Earth and Planetary Sciences and the Department of Materials Science and Engineering. He is the founding director of the Hopkins Extreme Materials Institute (HEMI), which addresses the ways in which people, structures, and the planet interact with and respond to extreme environments.

Ramesh's current research focuses on the design of materials for extreme conditions, the massive failure of rocks and ceramics, impact processes in planetary science, and impact biomechanics. Current projects include the use of laser shock experiments to study the deformation and failure of protection materials for the U.S. Army, the use of data science approaches in materials design, the development of a hypervelocity facility for defense and space applications, and modeling the disruption of asteroids that could hit the Earth. He has written over 200 archival journal publications, and authored the book "Nanomaterials: Mechanics and Mechanisms."

JOHNS HOPKINS
UNIVERSITY

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