

September 7, 2017

The Honorable James Mattis
Secretary of Defense
U.S. Department of Defense
1400 Defense Pentagon
Washington, DC 20301

Dear Mr. Secretary,

As you develop the fiscal year (FY) 2019 U.S. Department of Defense (DOD) budget request, the Coalition for National Security Research (CNSR), representing the undersigned research universities and institutes, scientific and professional associations and non-profits, respectfully requests you work to include robust and sustained growth in the DOD's basic research and science and technology (S&T) program budgets.

We also urge you to consider the science mission of DOD and develop FY 2019 funding levels based on prior year enacted levels rather than using the Future Years Defense Program (FYDP). Every other federal agency with a science mission, including the National Institutes of Health and National Science Foundation, develop budget requests based on the needs to meet its science mission while considering the political consensus reached in the annual appropriations process. From our perspective, DOD should follow a similar path for the S&T budget request.

While we realize your focus is to construct the proper force structure, address readiness shortfalls and launch modernization programs, the warfighter in 2040 will require technologies, tactics and practices that are likely not even known today. The mission of the defense basic research programs do just that by supporting the scientific discoveries that enabled satellite-based navigation and stealth that have led to paradigm shifts in the military's technological capabilities. Currently, the defense basic research programs are working to develop the military technologies of the future in quantum computation and communications, bio-inspired low energy information processing, photonics materials, additive 3D self-assembly materials, advancing autonomous systems, and high-energy, solid-state lasers capable of stopping attacks from rockets, artillery and mortars at the speed of light. Making significant breakthroughs in these areas and others requires stable and long-term funding. ***Consequently, we urge you to include at least a four percent increase in defense basic scientific research over enacted levels***, as is called for in [*Innovation: An American Imperative*](#), which is signed by the CEOs of Northrop Grumman, Lockheed Martin, Boeing, Microsoft, and endorsed by over 500 other leading organizations from industry, higher education, and science and engineering.

In addition, we believe it is absolutely critical to invest in research and development to enhance our manufacturing and industrial base. Our national security is enhanced when we invest in education and training programs that produce the next generation science and engineering workforce and support innovative efforts to overcome challenges facing the manufacturing and industrial base. As a result, we urge you to include funding in the FY 2019 budget request for the ***Manufacturing Engineering Education Program (MEEP)*** and continue robust support for the

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DOD-sponsored *Manufacturing USA Institutes*. According to the Office of Science and Technology Policy, 80 percent of manufacturers report a moderate or serious shortage of qualified applicants for skilled and highly-skilled production positions. This has significant implications for our national security if we have to rely on foreign nations for the manufacturing of defense-related products. The MEEP can help mitigate any shortage in qualified applicants by providing much needed resources for enhancing and developing new manufacturing engineering curriculum to prepare Americans to enter the manufacturing and industrial base workforce. Additionally, the Manufacturing USA Institutes are working to ensure we have the most innovative manufacturing and industrial base by bringing together a wide range of public and private partners to overcome technical manufacturing challenges. Every federal dollar invested in the Manufacturing USA Institutes has spurred \$2.05 of private sector investment into technologies to further our national security. We are already seeing the results from the institutes in addressing the valley of death for photonics-enabled semiconductors, addressing workforce development through work-study programs, and providing small businesses and start-ups with access to software, hardware, and expertise that they would not have access to due to high costs.

Finally, we remain concerned about the overall DOD S&T program. While we understand the Department is restricted as a result of the Budget Control Act caps, the FY 2018 DOD budget request for the S&T program was approximately 1 percent, or roughly \$5 billion below, expert-recommended levels. The result is an S&T program that is not growing at levels necessary to advance military technologies our warfighters need to continue to be the most effective fighting force in the world. With basic research serving as the first step in creating new military capabilities, the S&T program applies the knowledge gained from basic research to solve military problems, and develop the systems and components to potential solutions that are essential to fielding the military technologies of tomorrow. The private sector has no incentive to fund the majority of this type of research, so federal funding is vital to advancing technologies through the innovation pipeline. ***We urge you to include robust funding for the DOD S&T program in the FY 2019 budget request.***

Thank you for your consideration of our views. If we can be of any assistance as you develop the FY 2019 DOD budget request, please do not hesitate to contact us at cnsr.dodresearch@gmail.com

Sincerely,

American Chemical Society
American Institute for Medical and Biological
Engineering
American Mathematical Society
American Psychological Association
American Society for Engineering Education
ASME
Arizona State University
Association of American Universities
Association of Public and Land-grant Universities

Battelle
Boston University
Brown University
California Institute of Technology
Carnegie Mellon University
Columbia University
Computing Research Association
Consortium for Ocean Leadership
Cornell University

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