

Form Name:National Armaments Consortium (NAC) Executive Committee Member Application Form 2026

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CANDIDATE INFORMATION

Name	Jeremy Schreiber
Title	Associate Research Professor
Organization	Penn State Applied Research Laboratory
Organization Type	Academic
Address	
Email	
Phone	

CANDIDATE STATEMENTS

Explain how your background, training, experience and/or personal qualities support your candidacy to assume a governance position on the Executive Committee. Provide resume as a separate attachment.

My extensive background in advanced manufacturing, materials science, and organizational leadership positions me well to serve on the Executive Committee. With a Ph.D. in Engineering Science and Mechanics from Penn State and nearly two decades of experience at the Applied Research Laboratory, I have progressed from Graduate Assistant to Deputy Division Head and Associate Research Professor, demonstrating both technical excellence and leadership capability. My role managing the Advanced Manufacturing and Materials Engineering division has provided me with direct experience in strategic planning, resource allocation, and team leadership while overseeing multiple government projects and mentoring numerous undergraduate and graduate students as well as full-time employees.

My dual role as CTO/CDO of HAMR Industries LLC since 2016 has further developed my governance and strategic decision-making skills in a high-stakes environment. I have successfully overseen the daily operations of research projects with current expenditures exceeding \$20M in federal SBIR/STTR funding, and led the company to achieve significant technological milestones including producing the first cold spray additively manufactured part flown on a hypersonic missile and the world's largest CSAM parts for pressure vessels. This entrepreneurial experience has given me valuable insights into balancing innovation with fiscal responsibility, managing stakeholder expectations, and making critical decisions that affect organizational success and sustainability.

My commitment to service and collaborative leadership is demonstrated through my active involvement in professional organizations, including serving as a Student Board Member on the ASM International Thermal Spray Society Board of Directors (2014-2016) and as a PSU Chapter ASM Executive Committee Member. Additionally, my role as a reviewer for DoE SBIR programs and PSU Institute for CyberScience Faculty Affiliate reflects my engagement with the broader research community. These experiences, combined with my track record of mentoring students and employees, my extensive publication record, and my ability to bridge academic research with industrial application, have prepared me to contribute meaningfully to executive-level governance, strategic planning, and the advancement of organizational objectives.

Supporting Attachment(s)

What do you see as the most significant challenge(s) facing the business type you will represent and how would you propose to address those challenges if elected?

The most significant challenges facing advanced manufacturing and materials engineering businesses today are the critical need for workforce development amid a skilled labor shortage, and the imperative to accelerate technology transfer from research to commercial application while maintaining competitiveness in an increasingly global marketplace. The advanced manufacturing sector requires highly specialized talent with interdisciplinary expertise spanning materials science, process engineering, and digital technologies, yet educational pipelines are not producing graduates at the pace needed to meet industry demand. Additionally, companies must navigate the complex journey from laboratory innovation to scaled production while competing with well-funded international competitors and managing the lengthy timelines and substantial capital requirements inherent in manufacturing technology development.

If elected, I would propose addressing these challenges through strategic initiatives leveraging my dual perspective as both an academic researcher and industry executive. First, I would advocate for strengthened partnerships between industry, universities, and workforce development programs to create targeted training pathways, apprenticeships, and continuing education opportunities that align with evolving industry needs—drawing on my experience mentoring students and managing technical teams to develop practical curriculum frameworks. Second, I would work to establish mechanisms that streamline technology commercialization processes, facilitate strategic collaboration between research institutions and industry partners, and promote access to shared infrastructure and resources that reduce barriers to scaling new manufacturing technologies. My experience successfully transitioning cold spray additive manufacturing from research concepts to flight-qualified aerospace applications demonstrates the importance of persistent collaboration, risk management, and strategic investment in moving innovations from lab to market, principles I would bring to governance decisions affecting our sector's competitiveness and growth.

Please describe the importance of the NAC to your organization and provide a synopsis of the participation in NAC/DOTC since becoming a member (e.g., number of proposal submissions, awards, industry days and membership meeting attended).

The NAC (National Armaments Consortium) is critically important to Penn State University as it provides a vital bridge connecting our world-class research capabilities with critical defense needs, enabling our faculty and students to address real-world challenges while advancing the state of the art in advanced manufacturing and materials technologies. Through Penn State's Applied Research Laboratory, we have actively engaged with NAC/DOTC opportunities by submitting proposals that leverage our extensive facilities, interdisciplinary expertise, and proven track record in materials science, additive manufacturing, and defense applications. DOTC awards to Penn State as a prime contractor or subcontractor have spanned nearly 15 years up to the present, and multiple University researchers and departments have participated in proposals as Principal Investigators or as team members with industrial partners. The Applied Research Laboratory has been performing work for the DoD for more than 70 years and has a several examples of developing and transitioning technology to the DoD and to companies that support the DoD. Our participation has included attending industry days and membership meetings to understand emerging Army, Navy, and Air Force requirements, collaborating with industry partners on teaming arrangements, and pursuing research projects that align with Penn State's mission of translating fundamental research into practical solutions for the warfighter. The NAC framework is particularly valuable for our university context as it facilitates meaningful collaboration between academia, industry, and government while providing our graduate students and postdoctoral researchers with exposure to applied defense challenges, creating a pipeline of talent equipped to address future national security needs. This consortium model supports Penn State's broader strategic objectives of impactful research, workforce development, and service to the nation's defense mission.

WILLINGNESS TO SERVE CERTIFICATION

Signature



Date

06/16/2026

Jeremy M. Schreiber

EDUCATION

Ph.D. Engineering Science and Mechanics	The Pennsylvania State University	Dec 2016
M.S. Engineering Science and Mechanics	The Pennsylvania State University	May 2013
B.S. Materials Science and Engineering	The Pennsylvania State University	May 2011

Graduate Certificate – Laser-Materials Processing and Laser-Based Manufacturing
The Pennsylvania State University – December 2016

EXPERIENCE

Penn State Applied Research Laboratory University Park, PA
Deputy Division Head, Advanced Manufacturing and Materials Engineering
Associate Research Professor – Jul. 2023-Present
Assistant Research Professor - Jan. 2017-Jun. 2023

- Principal Investigator on multiple government projects
- Lead engineer for finite element modeling in Cold Spray
- Lead mechanical engineer for Large Diameter Unmanned Undersea Vehicles
- Mechanical and Materials engineer and finite element analyst for the Undersea Systems Office
 - Projects Available Upon Request
- Mentor undergraduate and graduate students as well as full time employees
- PSU Institute for CyberScience Faculty Affiliate
- Reviewer for DoE SBIR programs
- PSU Chapter ASM Executive Committee Member

HAMR Industries LLC, Pittsburgh, PA 2016-Present
CTO/CDO

- CTO/CDO of a research and development start-up
- Produced first cold sprayed additively manufactured (CSAM) part to be flown on a hypersonic missile
- Produced world's largest CSAM part for 6.75", 12.75", and 21" diameter external pressure vessels
- Oversee daily operation of research projects and IRAD
- Current research expenditures in excess of \$20M of federal SBIR/STTR funding

Penn State Applied Research Laboratory University Park, PA 2011-Dec. 2016
Graduate Assistant

Ph.D. Dissertation: Finite Element Implementation of the Preston-Tonks-Wallace Plasticity Model and Energy Based Bonding Parameter for the Cold Spray Process

- Developed ultra-high-strain-rate material property subroutine in Abaqus CAE using the Preston-Tonks-Wallace plasticity model
- Developed strain-energy based cold spray bonding model as a member of the U.S. Army Cold Spray Modeling Team
 - Results presented at U.S. ARL Technology Day

Master's Thesis: Failure and Fragmentation of High Strength Steel Rings Under Explosive Loading

- Predicted fragmentation pattern of high-strength steel rings made from AISI 4340 and HF-1 steel

Design and Fabrication:

- High temperature (400 C), high pressure (1500 PSI), high voltage (10 kV) pressure vessel for testing wire insulation breakdown
- New type of stress corrosion cracking fixture, used on cold spray aluminum 6061 alloy
- Test fixture to simulate a large bearing used in U.S. Navy vessels
- Developed compaction die designs for military applications

Research Projects:

- Supported the U.S. Navy with evaluating failed components in aircraft arresting gear systems
- Study for machinability for a valve used in U.S. Navy vessels
- Supported the U.S. Army with cold spray repair of military components
- Evaluated a new type of aluminum anodization process for a private company
- Investigated material properties under high strain rate loading for aluminum and steel
- Characterized intermetallic formation of cold sprayed aluminum coatings on molybdenum and tungsten substrates
- Assisted in the development of a cold spray repair method for cast aluminum aerospace components

Materials Characterization Skills: scanning electron microscopy, energy dispersive spectroscopy, optical microscopy, powder and bulk X-ray diffraction, mechanical testing, electrochemical and salt fog corrosion testing, fatigue, hardness testing, and machining

Active Security Clearance: TOP SECRET/SCI Eligible

Instructor/Assistant:

E MCH 315: Mechanical Response of Engineering Materials

E MCH 407: Computer Methods in Engineering Design

E MCH 461: Finite Elements in Engineering

E MCH 560: Finite Element Analysis

E MCH 535/MATSE 564: Deformation Mechanisms of Materials

Penn State Applied Research Laboratory University Park, PA

2009-2011

Undergraduate Intern

Undergraduate Thesis: Characterization of Spray Formed Hypereutectic Aluminum-Silicon Alloys for UAV Engines

Metal and Ceramics Processing Department

- Cold spray experience includes sample preparation, measurement, and application of coatings
- Perform material analysis, including sample preparation, optical microscopy, scanning electron microscopy, Vickers and Rockwell hardness testing for a large number of material systems
- Conducted wear testing, corrosion testing of cold spray coatings

PUBLICATIONS/PROCEEDINGS

1. Naccarelli, Anthony and Auman, Wyatt and Reiss, Justin and Schreiber, Jeremy and Sharma, Mala and Eden, Timothy, Nozzle Clogging in Cold Spray of Aluminum 6061 through 304 Stainless Steel Split Nozzles: Mechanisms, Observations, and Quantitative Measurements. Available at SSRN: <https://ssrn.com/abstract=5571858> or <http://dx.doi.org/10.2139/ssrn.5571858>

2. Sharma, M.M.; Stutzman, A.M.; Schreiber, J.M.; Wolfe, D.E.; Eden, T.J. Nickel Coatings on Ceramic Materials Using Different Diffusion Techniques. *Coatings* **2023**, *13*, 2072. <https://doi.org/10.3390/coatings13122072>
3. Griffis, Jacklyn and Bonfini, Rachel and Ching, Stephen and Shahed, Kazi and Schreiber, Jeremy and Manogharan, Guha and Hast, Michael W., Macroscopic surface features of additively manufactured zinc do not significantly alter metabolic activity. Available at SSRN: <https://ssrn.com/abstract=5682892> or <http://dx.doi.org/10.2139/ssrn.5682892>
4. Griffis, J, Masker, A, Schreiber, J, & Manogharan, G. "Site-Specific Property Informed Interface Design of Multi-Material Laser Powder Bed Fusion." *Proceedings of the ASME 2024 19th International Manufacturing Science and Engineering Conference. Volume 1: Additive Manufacturing; Advanced Materials Manufacturing; Biomanufacturing; Life Cycle Engineering*. Knoxville, Tennessee, USA. June 17–21, 2024. V001T01A034. ASME. <https://doi.org/10.1115/MSEC2024-125138>
5. Shahed KS, Groeneveld, Meijer W, Lear M, Schreiber J, Manogharan G. Powder spreading behavior of bimodal ceramics in the binder jetting process. *Mater Sci Add Manuf*. 2025;4(2):025110016. doi: 10.36922/MSAM025110016
6. J.M. Schreiber, I. Smid, T.J. Eden, K. Koudela, D. Cote, V. Champagne, Cold spray particle impact simulation using the Preston-Tonks-Wallace plasticity model, *Finite Elements in Analysis and Design*, Volume 191, 2021, 103557, ISSN 0168-874X, <https://doi.org/10.1016/j.finel.2021.103557>.
7. Sharma, M., Judd, K., Schreiber, J., Eden, T., *Deformation Behavior of Single Particle Cold Spray Ti-6Al-4V Splats*. *Materials Science Forum* Vol.1016, pp 1325-1330
8. Sundberg, K., Sousa, B.C., Schreiber, J. *et al*. Finite Element Modeling of Single-Particle Impacts for the Optimization of Antimicrobial Copper Cold Spray Coatings. *J Therm Spray Tech* (2020). <https://doi.org/10.1007/s11666-020-01093-8>
9. Sharma, M. Schreiber, J.M., Eden. T.J., Champagne V. *Stress Corrosion Cracking Resistance of Cold Sprayed Al6061 Deposits Using a Newly Developed Test Fixture*. *Coatings* 2019, 9, 445; doi:10.3390/coatings9070445
10. Schmitt, M.P., Schreiber, J.M., Rai, A.K., Eden, T.J., Wolfe, D.E. (2017). Development and Optimization of Tailored Composite TBC Design Architectures for Improved Erosion Durability. *Journal of Thermal Spray Technology* 26: 1062. <https://doi.org/10.1007/s11666-017-0561-6>

11. Schreiber, J. M., Smid, I., Eden, T. J., & Jann, D. (2015). Prediction of fragmentation and experimentally inaccessible material properties of steel using finite element analysis. *Finite Elements in Analysis and Design*, 104, 72–79. doi:10.1016/j.finel.2015.06.001
12. Schreiber, J. M., Omcikus, Z. R., Eden, T. J., Sharma, M. M., Champagne, V., & Patankar, S. N. (2014). Combined effect of hot extrusion and heat treatment on the mechanical behavior of 7055 AA processed via spray metal forming. *Journal of Alloys and Compounds*, 617, 135–139. doi:10.1016/j.jallcom.2014.07.184
13. Schreiber, J.M., I. Smid, T. Eden (2015). *A Finite Element Based Approach to Deformation of Encapsulated Particles in Cold Spray*. Materials Science and Technology (MS&T 2015 Columbus, OH)
14. A. Wiltner, B. Kloden, F. Dittrich, Th. Weissgarber, B. Kieback, Schreiber, J.M., T.J. Eden, J.K. Potter, I. Smid, “*Aluminum Deposition onto molybdenum and tungsten applying cold spray technology: study of morphology, cold spray parameters, diffusion kinetics and alloy formation,*” 18th Plansee Seminar 2013.
15. Schreiber, J.M., I. Smid, and T. Eden, “Determination of High Strain Rate Behavior of Steel Using Finite Element Analysis and High Strain Rate Experimentation,” *Proceedings of TMS 2013*, TMS (The Minerals, Metals, and Materials Society, March 2013.
16. Schreiber, J.M., I. Smid, and T. Eden, “Fragmentation of a Steel Ring Under Explosive Loading,” *Proceedings of the 1st International Conference on 3D Materials Science*, TMS (The Minerals, Metals, and Materials Society, July 2012.

WHITE PAPERS/PROPOSALS

Available Upon Request

PRESENTATIONS/POSTERS

Presentation: High-Strain-Rate Tensile Property Determination Using Finite Element Analysis and Experimental Methods. MS&T 2012 August 2012 Pittsburgh, PA

Presentation: High-Strain-Rate Property Determination using Finite Element Analysis and Split-Hopkinson MS&T 2013 Montreal, Quebec, Canada

Presentation: High-Strain-Rate Property Determination of High-Strength Steel Using Finite Element Analysis and Experimental Data TMS 2013 San Antonio, TX

Presentation: J. Schreiber, I. Smid, T. Eden, “Coupling Experimental and Numerical Methods to Predict Fragmentation Under Extremely High Strain Rates”. MS&T 2014 Pittsburgh Pennsylvania. October 2014

Presentation: Modeling of Operational Parameters for Cold Spray Deposition. Jeremy Schreiber, Ivi Smid, Timothy Eden TMS 2015 Orlando, FL

Presentation: T. Eden, J. Schreiber, “Finite Element Analysis of Cold Spray Particle Impact”. Cold Spray Action Team Meeting, Worcester Massachusetts, June 2015

Presentation: J. Schreiber, I. Smid, T. Eden, “A Finite Element Based Approach to Deformation of Encapsulated Particles in Cold Spray”. MS&T 2015 Columbus Ohio, October 2015

Poster: J. Schreiber, T. Eden, I. Smid, M. Sharma. “Finite Element Modeling of Hard Particle Impact During Cold Spray Deposition.” North American Cold Spray Conference. Montreal, Quebec, Canada 2014

Poster: J. Schreiber, I. Smid, T. Eden, “Characterization and Constitutive Material Model Implementation for High-strain-rate Deformation Modeling with Finite Elements”. TMS 2014 San Diego California, March 2014.

AFFILIATIONS/MEMBERSHIPS

Student Board Member – ASM International Thermal Spray Society Board of Directors (2014-2016)

Member- The American Ceramic Society (ACerS)

Member – Association for Iron and Steel Technology (AIST)

Member – ASM International, PSU Chapter Executive Committee Member

Member – The Minerals, Metals, and Materials Society (TMS)

Member - Aircraft Owners and Pilots Association (AOPA)

Member – Experimental Aircraft Association (EAA)

Private Pilot – Aircraft, Single Engine, Land, Instrument Rated

STUDENTS MENTORED

Zachary Omcikus – Wage Payroll Undergraduate, Materials Science and Engineering, Carpenter Technologies

Adam Fink – Wage Payroll Undergraduate, Materials Science and Engineering

Michael Trowbridge – Distinguished Undergraduate Program, Mechanical Engineering, Engineering Science and Mechanics, Boeing

Leland Renoff – Wage Payroll Undergraduate, Aerospace Engineering

Jacob Yochimowitz – Wage Payroll Undergraduate, Aerospace Engineering, Pratt and Whitney