

**National Academy of Inventors (NAI) Chapter at NJIT Forum:  
Collaborative Research and Technology Innovation Partnerships**

and

**NJIT 2023 Research Institutes, Centers and Laboratory Showcase**

March 30, 2023; 9.00 AM – 3.00 PM  
Ballroom A/B and Gallery, Campus Center, NJIT

YouTube Video Streaming Link: [https://youtube.com/live/D\\_VwZ5Lsr-w?feature=share](https://youtube.com/live/D_VwZ5Lsr-w?feature=share)

Complete Agenda is posted [here](#).

**Abstract:**

Recent changes in the world have been largely driven by technology innovations and partnerships creating new pathways for economic growth addressing [grand challenges](#) and impacting the way we live. It is evident that the vast knowledge base and unprecedented investments in basic and applied research needs to be synergistically augmented by advancements in translational research, market validation and acceptance as well as smart manufacturing, and distribution management strategies where needed. Such synergies to bring global solutions to societal challenges essentially require technology innovation partnerships among research, industry, business, infrastructure, as well as government and non-government stakeholder communities.

The U.S., as the technology innovation leader in the world, continues to focus on creating resources and synergies for developing sustainable societies towards healthier and prosperous communities with better quality of life.

The NAI Chapter-NJIT Forum and Research Showcase will feature:

1. Distinguished Keynote Talk by Graciela Narcho, Deputy Assistant Director of the NSF Directorate for Technology, Innovation and Partnerships,
2. Distinguished Panel Discussion and working group session on Future Trends and Opportunities in Technology Innovation Partnerships, and
3. e-Poster sessions of research institutes, centers and specialized laboratories from leading universities in the region. The showcase will provide an open forum to discuss pathways for developing synergistic technology innovation partnerships among stakeholders to address global grand challenges in the areas of sustainable environment and climate change, preventive, personalized and precision healthcare, and data revolution with trustworthy information systems and secured cyberspace.

## **Program Agenda**

- 8.30 AM – 9.00 AM: Registration, Breakfast and Electronic PPT Poster Set-up
- 9.00 AM – 10.00 AM: NJIT, Rutgers University, Princeton University, Rowan University, Columbia University, Stevens Institute of Technology and Montclair State University Research Institutes Research Institutes, Centers and Laboratories Showcase: Electronic Poster Preview Session
- 10.00 AM – 10.05 AM: Welcome Remarks:  
Atam Dhawan, Interim Provost, NJIT  
Teik Lim, President, NJIT
- 10.05 AM – 10.10 AM: Program Agenda and Introduction to the Distinguished Speaker  
Atam Dhawan, Interim Provost, NJIT
- 10.10 AM – 11.00 AM: Keynote Presentation: Technology and Innovation Partnerships Strategic Funding Initiatives at National Science Foundation  
Distinguished Speaker: [Graciela \(Gracie\) Narcho](#)  
Deputy Assistant Director of the Directorate for Technology, Innovation and Partnerships
- 11.00 AM – 11.05 PM: Welcome Remarks to Research Showcase  
Robert Cohen, Chair, NJIT Board of Trustees  
President, Digital, Robotics, and Enabling Technology, Stryker
- 11.05 AM – 12.00 PM: NJIT-Rutgers-Princeton-Rowan-Stevens-Montclair-Columbia Research Institutes, Centers and Laboratories Showcase: Networking and Electronic Poster Session-1
- 12.00 PM – 12.30 PM: Lunch and Networking
- 12.30 PM – 2.00 PM: Distinguished Panel Discussion: Future Trends and Opportunities in Technology Innovation Partnerships
- Panel Topics and Areas of Discussion:
- (1) What strategic priority areas with complementary expertise from participating institutions should be the focus for future collaborations and innovation partnerships aligned with potential funding opportunities?
  - (2) What assets and resources are available from participating institutions and organizations to share on future collaboration and partnership proposals in these focus areas?

- (3) How to initiate some seed funding program to synergize the potential collaborations and partnerships identified in (1) and (2)?
- (4) What are the next steps to promote collaborations and partnerships to address potential funding opportunities with the formation of working groups to continue developing a framework of collaborative innovation partnerships in the selected focus areas?

Moderator:

Govi Rao, CEO, [Phase Change Solutions](#)

Panelists:

Michael E. Zwick, Senior Vice President for Research, [Rutgers University](#)

Craig Arnold, Vice Dean for Innovation, [Princeton University](#)

Edmund Synakowski, Vice Provost for Research and Innovation, [Stevens Institute of Technology](#)

Piotr Piotrowiak, Senior Vice Chancellor for Research and Collaborations, [Rutgers-Newark](#)

Tabbatha A. Dobbins, Vice President, [Rowan University](#)

David Rotella, Sokol Professor of Chemistry, [Montclair State University](#)

Gwen E. Nero, Ph.D., Deputy Director, Industry Relations Group, [Columbia Technology Ventures](#), Columbia University

Judith Sheft, Executive Director, [New Jersey Commission of Science, Innovation and Technology](#)

Shawn A. Chester, Associate Vice Provost for Research Collaborations and Partnerships, [New Jersey Institute of Technology](#)

2.00 PM: Concluding Remarks

2.00 PM – 3.00 PM: NJIT-Rutgers-Princeton-Rowan-Stevens-Montclair-Columbia Research Institutes, Centers and Laboratories Showcase: Networking and Electronic Poster Session-2

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### **Biographical Sketches**

**[Graciela \(Gracie\) Narcho](#):** Graciela (Gracie) Narcho is the U.S. National Science Foundation's deputy assistant director of the Directorate for Technology, Innovation and Partnerships, or TIP. Narcho has been with NSF for nearly three decades, serving in a broad range of roles spanning the development of the TIP Directorate, grants and agreements oversight, program management, and diversity and inclusion efforts.

Narcho is known as a change agent for positive human capital reforms, business practice innovations, and NSF policy development. Together with colleagues across NSF, Narcho has

helped develop and launch several NSF initiatives, including the industry-government partnerships for the National Artificial Intelligence Research Institutes program, the Global Environment for Networking Innovation, or GENI, the Computing Community Consortium, or CCC, and Computer and Information Science and Engineering Graduate Fellowships, or CSGrad4US.

As an NSF grants official, Narcho developed the funding arrangement for the U.S. Civilian Research and Development Foundation for the newly Independent States of the Former Soviet Union, the first NSF congressionally mandated, endowed, non-governmental, nonprofit foundation; and negotiated the first jointly-developed and funded government-industry Engineering Research Center.

In recent years, Narcho co-led the NSF partnerships working group, streamlining processes and procedures for NSF partnerships with industry, nonprofits, other federal agencies and international funding organizations.

Narcho has also served in senior leadership roles within two NSF Directorates. In Computer and Information Science and Engineering, or CISE, she led the largest transformation of the workforce structure and responsibilities in CISE history, resulting in a more flexible workforce. As deputy division director and acting division director for the then-Division of Industrial Innovation and Partnerships within the NSF Directorate for Engineering, Narcho led policy development and programs that accelerate federally funded research into market opportunities. Under Narcho's leadership, NSF initiated a new pre-submission pitch process for small businesses, providing more immediate feedback to early-stage startups.

Narcho received her bachelor's degree in economics from Tufts University and a master's in public administration from George Washington University, with a concentration in procurement and contracting.

**Govi Rao:** Govi Rao is a visionary thought leader and seasoned business growth architect with more than 25 years of leadership experience globally - scaling businesses and transforming ecosystems across several industries including specialty chemicals, coatings, building materials, lighting, energy and the rapidly evolving Fourth Industrial Revolution. In his current role as CEO of Phase Change Solutions, Govi leads a team of highly innovative and inspiring leaders, with a vision to decarbonize our footprint and enable human health with sustainable solutions to manage temperature in any environment. Govi is a co-founder of the CARBON Group Global - a sustainable impact enterprise scaling transformational solutions, specifically to address education, total resiliency of women and resource efficiency (food, energy & water). Prior to CARBON, Govi was the President and Chief Executive Officer of Noveda Technologies a leader in water and energy management solutions, based in Bridgewater, NJ. Govi is the former Chairman and Chief Executive Officer of Lighting Science Group Corporation, a leading LED lighting Solutions Company. He was instrumental in envisioning and establishing Lighting Science as an innovative pace setter in the emerging LED lighting space.

Previously, Govi was Vice President and General Manager of the Philips Solid State Lighting business in North America. He also held several other leadership roles at Philips, including Vice President of Business Creation & Brand, where he was responsible for product management, strategic marketing, branding and sustainability. Prior to joining Philips, Govi spent over a decade with specialty chemicals leader Rohm and Haas Company (now part of Dow Chemicals) in various leadership roles across a range of businesses and geographies. In addition to his experience with a wide business portfolio, Govi has extensive functional expertise that includes strategic planning, product management, marketing, operations, leadership development

and general management. Widely traveled across Asia, Europe and the Americas, Govi has a keen sense of value creation in emerging markets and technologies, grounded on the principles of sustainability. Govi has built winning teams that achieved extraordinary goals in start-ups as well as mature businesses – pioneering and inspiring profitable and sustainable growth. A graduate of Villanova University, Govi serves on the Advisory Board of Undergraduate Research and Innovation at NJIT, and serves as an advisor to Hellothinkster, an AI based educational technology company. Govi is active in discussions with various Governments, NGOs, and investment groups to drive market adoption of social impact & energy efficiency solutions and is a contributing author of the Sustainable Enterprise Fieldbook (AMACOM 2008). Govi has testified to the U.S House of Representatives on Intellectual Property (IP) and Innovation.

[Michael E. Zwick](#): Michael E. Zwick, Ph.D., the Senior Vice President for Research at Rutgers University, leads the Office for Research that supports the research, scholarship, and creative endeavors of all Rutgers faculty. Dr. Zwick oversees 329 staff serving Research Administration, Innovation Ventures (technology transfer and entrepreneurship), Animal Care, Advanced Research Computing, Core Services, Research Development, and Finance and Administration functions which are critical in managing the support for the University's growing research and innovation portfolio of more than \$850 million in sponsored awards annually.

Dr. Zwick's collaborative, team-based approach comes from his 25 years of military service as a former surface warfare qualified officer in the United States Navy (Commander, O-5). Dr. Zwick served onboard the USS KAUFFMAN (FFG 59) for 38 months and is a veteran of Desert Storm. As a reservist, he served in multiple commands, including Commander Pacific Fleet, Commander US Forces Japan, Naval Medical Research Center, and the Office of Naval Research. Dr. Zwick was called to active duty to support the Iraq and Afghanistan war efforts from November 2002 through November 2004.

Dr. Zwick earned a B.S. from Cornell University in Biological Sciences, specializing in Genetics and Development, and a Ph.D. in Population Biology from the Center for Population Biology at the University of California at Davis. A former Professor of Human Genetics at Emory University, his research uses genetics principles to discover the causes of rare and common disorders, with research experience as an individual investigator, a member of large consortiums, and a research leader.

[Craig Arnold](#): Craig Arnold is Vice Dean for Innovation and Susan Dod Brown Professor of Mechanical and Aerospace Engineering. He has served since 2015 as the director of the Princeton Institute of Materials. He leads a vibrant research program that ranges from basic science to applied technology aimed at developing a deeper understanding of materials synthesis and processing in areas including advanced manufacturing, energy storage and conversion, and optics and photonics.

Craig leads the Princeton Innovation initiative and oversees the University's efforts to grow Princeton's culture of innovation across disciplines. The role aims to strengthen the University's capacity to engage with entrepreneurs, alumni, industry, technology investors and other potential partners. The vice dean for innovation works closely with offices across campus and within the Office of the Dean for Research, including the Office of Technology Licensing, Corporate Engagement and Foundation Relations, and the Princeton Entrepreneurship Council.

In 2017, Arnold received an Edison Patent Award from the Research & Development Council of New Jersey for the creation of an adjustable lens that focuses light in response to sound waves. The tunable acoustic gradient (TAG) lens is now used in many industrial and research

applications including robotics, machine vision, industrial metrology, and ultra-high precision microscopy. Arnold holds 13 granted patents and is the co-founder of two companies based on research conducted at Princeton. TAG Optics Inc. developed the TAG lens and was later acquired by a major precision instrument manufacturer. Invictis Technologies is working to create a safer and less painful automated intravenous injection device.

Arnold is a preeminent researcher in the field of materials science; he and co-authors have published over 200 scientific papers and book chapters. He serves as a member of the National Research Council's National Materials and Manufacturing Board and is a fellow of the Society of Photo-Optical Instrumentation Engineers (SPIE) and the Optical Society of America.

Arnold was named a Knight of Laser Technology (2018) by the International Academy for Production Engineering (CIRP)-Photonic Technologies. He has received a number of prominent industry awards for his technology including R&D World magazine's R&D 100 award, the SPIE Prism Award for Photonics Innovation, and Vision Systems Design magazine's Innovators Award. Arnold has received prestigious federal awards and grants, including the National Science Foundation CAREER Award and the Office of Naval Research (ONR) Young Investigator Award.

Recognized widely for his mentorship and teaching, Arnold has advised many undergraduates, graduate students and postdoctoral researchers. He has received the Princeton Undergraduate Engineering Council Teaching Award (2009, 2017 and 2022) and the School of Engineering and Applied Science Excellence in Teaching Award (2019 and 2021). Arnold is a member of the executive committee for Princeton's Entrepreneurship Certificate Program and the executive committee of the Andlinger Center for Energy and the Environment. Arnold holds a Ph.D. in experimental condensed matter physics from Harvard University and a B.S. from Haverford College. He was a postdoctoral researcher at the Naval Research Laboratory prior to joining the Princeton faculty in 2003.

[Edmund Synakowski](#), Edmund Synakowski serves as Vice Provost for Research and Innovation and the Stevens Institute of Technology and Professor of Physics, having joined Stevens in November 2022. His professional path has included research leadership service at the University of Nevada, Las Vegas as Vice President for Research and the University of Wyoming as Vice President for Research and Economic Development. His move to academia followed federal service from 2009 until 2017 as Associate Director of Science at the U.S. Department of Energy for Fusion Energy Sciences. (FES). He also served as leader of the Fusion Energy Program at the Lawrence Livermore National Laboratory (2006-2009). These leadership roles were grounded in 17 years of magnetic fusion energy research at the Princeton Plasma Physics Laboratory from 1988 until 2006, including serving as Head of Research for one of the country's leading fusion science centers, the National Spherical Torus Experiment (NSTX). For his federal service, Ed received the Secretary's Meritorious Service Award. His research record includes over 160 peer-reviewed publications, awards for excellence in research from the American Physical Society (APS) and Princeton University, and Fellowship in the APS and the UK's Institute of Physics.

Dr. Synakowski's career has been driven by a desire to create opportunities for partnerships that bring together organizations of complementary strengths and needs in order to make progress in complex problems. Examples of this include a national lab-corporate partnership he forged from PPPL with General Atomics, first-of-kind international partnership programs his office launched while he was at FES that created opportunities for researchers including students, and his advocacy that helped enable the U.S. to remain a partner amidst tight budgets in the international fusion

energy megaproject, ITER. He led a campus-wide effort at the University of Wyoming to identify a set of “Grand Challenges” that demand attention from all of the disciplines, including the arts and humanities, and looks forward to leading a similar effort at Stevens. He sees the opportunity of a university embracing complex challenges and enabled by partnership to be that of creating an environment where students come to understand their own agency in navigating and leading in a complex, disruptive world.

[Piotr Piotrowiak](#): Dr. Piotr Piotrowiak is the Senior Vice Chancellor for Research & Collaborations as well as Professor of Chemistry and Physics at Rutgers University-Newark, where he oversees an ultrafast laser spectroscopy laboratory. In his administrative capacity coordinates the multidisciplinary research portfolio and major initiatives of the Newark campus of Rutgers and works closely with external partners. His vision is committed to fostering a close continuum of research, education and outreach, as well as expanding the active research base beyond the confines of the traditional STEM core.

Piotr holds an MS in Chemical Physics from the University of Wrocław in his native Poland and a Ph.D. in Physical Chemistry from the University of Chicago. Prior to moving to Rutgers-Newark, he was a postdoctoral associate at the Argonne National Laboratory and Associate Professor of Chemistry at the University of New Orleans. His research is dedicated to the molecular-level control of light-to-energy conversion in complex materials and at interfaces. Among his key achievements is the design and construction of a breakthrough Kerr-gated microscope capable of collecting fluorescence ‘movies’ with subpicosecond temporal resolution, in recognition for which he was awarded the Donald H. Jacobs Chair in Applied Physics in 2012.

Beyond his own laboratory, he contributed to strengthening the research infrastructure of the university as the lead PI on 5 successful NSF MRI proposals and served as a visiting fellow at a number of institutions, including Tokyo Institute of Technology and Genentech, Inc.

[Tabbatha A. Dobbins](#): Dr. Tabbetha Dobbins is Vice President for Research and Dean of the Graduate School at Rowan University. She is also a full professor in the Dept. of Physics & Astronomy at Rowan University. She joined Rowan University in 2010. As Vice President for Research and Dean of the Graduate School (since July 1, 2020), she carefully steered our researchers through a historic pandemic that interrupted laboratory activities. Even so, she shepherded the research enterprise through a steep increase in sponsored research. The institution’s commitment to excellence in research has led Rowan to further expand plans on the road to R1 designation. She led key consultancies, an internal Blue-Ribbon Committee and an external consultant from the Education Advisory Board (EAB) to help chart the path forward. After July 2023, she will fully focus on developing Rowan’s research-based graduate programs, as well as creating services, programs, culture, support, and community for graduate students and post-doctoral fellows on Rowan University’s campuses as Dean of the Graduate School.

Prior to joining Rowan University, she was a tenured associate professor in the Dept. of Physics at both Grambling State University and Louisiana Tech University. She began to demonstrate commitment to both science and society in highly unique ways. Her NSF funded projects included ways to introduce students to instrumentation and to the excitement of materials research. Her research programs are aimed at attracting and recruiting top students to the sciences using societally relevant energy-related and biomedical-related topics. She continues to do cutting edge research in applying synchrotron x-ray and neutron analysis to modern engineering problems

in carbon nanotubes, gold nanoparticles, the hydrogen fuel economy, and polymer self-assembly. She has 30 scholarly publications in peer reviewed journals (h-index of 13).

Her service roles include membership on the African Light Source Executive Steering Committee; the American Institute of Physics - Task Force for Underrepresentation of African Americans in Physics; the American Physical Society, Forum on International Physics; and the National Synchrotron Light Source Executive Users Committee.

A native of Philadelphia, PA, she earned her B.S. degree in Physics at Lincoln University (Lincoln University, PA) (May 1993); M.S. in Materials Science and Engineering at the University of Pennsylvania (Philadelphia, PA) (Dec 1995); and Ph.D. in Materials Science and Engineering from Penn State University (May 2002). She was a National Research Council (NRC) Post-Doctoral Fellow at NIST in Gaithersburg, MD (Sept 2001 to June 2003).

[David Rotella](#): Dr. David Rotella is Sokol Professor of Chemistry at the [Montclair State University](#) where he leads an active extramurally funded research group focused on drug discovery for CNS and neglected diseases. Dr. Rotella earned a B.S. Pharm. magna cum laude at the University of Pittsburgh and a Ph.D. in medicinal chemistry at the Ohio State University. After a postdoctoral studies in organic synthesis at Penn State University, he joined the faculty at the University of Mississippi school of pharmacy where his research focused on synthesis of novel enzyme inhibitors and natural product analogues. He joined the Montclair State faculty in 2011 following a 20-year career in the pharmaceutical industry as a medicinal chemist, leading and participating in a number of drug discovery programs that provided molecules for human clinical trials in psychiatry, Parkinson's Disease, diabetes and erectile dysfunction.

His medicinal chemistry laboratory is focused on the synthesis of novel biologically active small molecules. Collaborative projects are underway to discover inhibitors of a malarial protein kinase that is key in the parasite's life cycle, to optimize inhibitors of PDE11A, an enzyme involved in memory disorders and the synthesis of conformationally restricted diamines that can be used to discover novel ligands for G-protein coupled receptors. This work is funded by the National Institutes of Health and by the Margaret and Herman Sokol Endowment.

[Gwen E. Nero](#), Gwen Nero is Deputy Director of Industry Relations at Columbia, leading industry partnerships for the Columbia Climate School and Pandemic Response Institute. Gwen leads strategy development and implementation for these two new cross-cutting, impact-oriented initiatives at Columbia. This includes developing new internal processes that facilitate multifaceted industry partnerships, relationship development and management, and agreement negotiation and renewal with strategic industry partners. These partnerships include opportunities for facilitated talent recruitment of students to industry careers, collaborative research and translation, advocacy and joint proposals, and shared communication, among other shared priorities.

Most recently, Gwen directed industry relations and innovation at UC San Diego Scripps Institution of Oceanography, developing and leading their industry affiliates program, industry sponsored research, and ocean technology incubator. Gwen has served on the boards of TMA BlueTech and Ocean Visions and on the Entrepreneurial Advisory Committee of NYC Tech Connect. Gwen has taught for the NYCRIN NSF I-Corps program and served as Program Manager for incubator Harlem Biospace.

Gwen holds a B.A. in physics from Barnard College and M.S., M.Phil., and Ph.D. in biomedical engineering from Columbia University.



[Shawn A. Chester](#): Dr. Shawn Chester is currently the Associate Vice Provost for Research Collaborations and Partnerships and an Associate Professor in Mechanical Engineering at the New Jersey Institute of Technology. Shawn focuses on enhancing research collaboration and partnerships and bringing investigators together to conceptualize and develop large-scale, multidisciplinary research initiatives and translate them into compelling funding opportunities; experience building cohesive, high performing teams. Shawn also oversees the office of research collaborative research events and initiatives towards developing stronger synergies and partnerships internally as well as with external stakeholders.

Shawn's research focus in the past few years has been the development of experimentally validated continuum level constitutive theories for large-deformation multiphysics behavior of polymeric materials and the associated numerical implementation. His work spans most aspects of mechanics; experimental characterization, theoretical modeling, numerical implementation, and experimental validation. Shawn has been recognized by a number of awards, specifically the ASME AMD Thomas J.R. Hughes Award, an NSF CAREER, and the ASME AMD Haythornthwaite award.

Before joining NJIT, Shawn was a postdoctoral researcher at Lawrence Livermore National Laboratory and obtained his PhD in solid mechanics from the Mechanical Engineering department at MIT. He obtained both his BS and MS in Mechanical Engineering from NJIT.

[Judith Sheft](#): Judith Sheft is the Executive Director of the NJ Commission of Science, Innovation and Technology. The Commission's mission is to accelerate economic development through science, innovation and technology by stimulating academic-industrial collaboration, encouraging and supporting entrepreneurs and inventors. Previously she was involved with regional economic and cluster development at the New Jersey Innovation Institute @ NJIT for managing the HealthIT Connections entrepreneurial cluster development program, the NJIT I-Corps Site and the Procurement Technical Assistance Center. She has been engaged with technology /IP innovation and commercialization efforts working with faculty and students to create startup companies and establishing licensing relationships with corporate partners. She advised external startups at NJIT's high technology / life sciences business accelerator/incubator. She is a former member of the NJ – Israel Commission and serves on the Board of Greater Newark Enterprise Corporation, StartUp Newark, Women's Center for Entrepreneurship Corporation, Einstein's Alley, SheTek, R&D Council of NJ, NJ Big Data Alliance and the NJEDA Technology Advisory Board.