



Director, Ion Beam Laboratory

University at Albany – State University of New York



UNIVERSITY
AT ALBANY
STATE UNIVERSITY OF NEW YORK

The University at Albany (UAlbany) seeks applications and nominations for the position of Director of the Ion Beam Laboratory (IBL).

The IBL Director will provide leadership to maintain and advance the IBL and its capabilities, facilitate collaborations, and promote research and scholarly activities involving ion beams. The Director reports to the Dean of the College of Nanotechnology, Science, and Engineering, where they will have an academic appointment, and works closely with the Vice President for Research.

UAlbany's renowned IBL has a remarkable and powerful collection of ion beam facilities and instrumentation -- arguably the best collection of such facilities in the world -- that enables deep

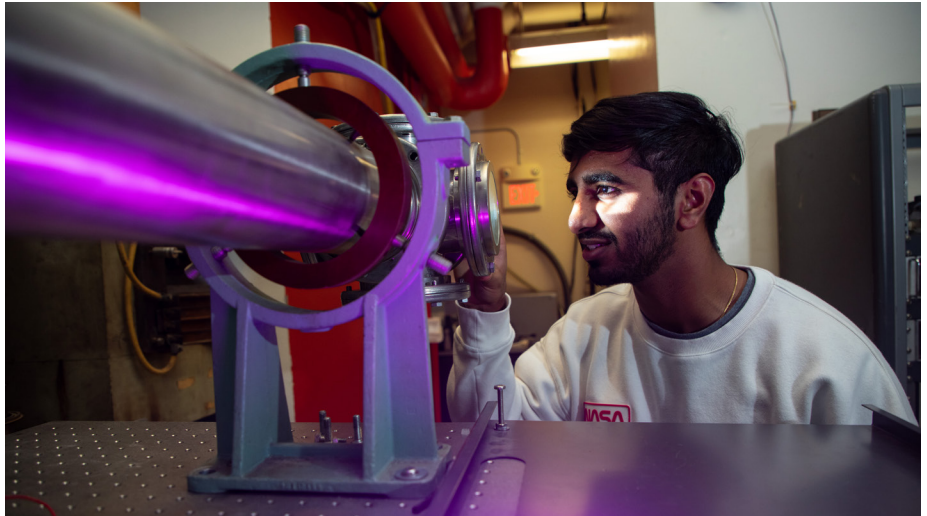
exploration of scientific phenomena by providing valuable experimental tools, resources, data analysis, and research and educational training in the use of ion beams to students and researchers at UAlbany, other educational institutions, industry, and government partners.

The University at Albany is a major public research university where over 17,000 undergraduate and graduate students collaborate with top-ranked faculty to conduct significant research and scholarship in a wide range of disciplines. UAlbany is consistently ranked among the top universities nationally. As an R1 institution, the University is committed to enhancing research in the growing STEM space and improving opportunities for underrepresented students and future professionals in their fields.

Ion Beam Laboratory

The Ion Beam Laboratory, established in 1970, offers beams of a wide variety of ions at energies as high as 4 MeV and with multiple experimental capabilities via six beamlines. These are used to study the effects of ion irradiation on ion implantation in different semiconducting, organic, and biological materials and surfaces. Each beamline is dedicated to a specific type of experiment that can be performed. These include Rutherford Backscattering (RBS), High-Resolution RBS, Particle induced X-ray Emission (PIXE), Channeling PIXE and RBS, Microbeam RBS and PIXE, Nuclear Reaction Analysis (NRA), and Ion Implantation.

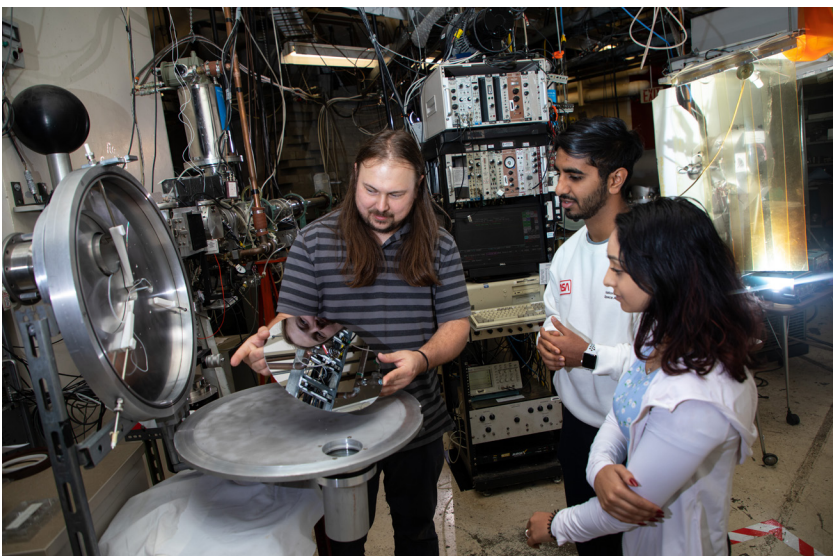
The two sources of ion beams at the Laboratory are a Radiation Dynamics Dynamitron, which can deliver beams of energy ranging from 0.3 MeV to 4.0 MeV, and an Extrion 400 Ion Implanter with an energy limit of 400 KeV. The Dynamitron allows the energy range to be extended to 8.0 KeV by producing and accelerating doubly charged ions. Commonly, ion beams of H, He, Ne, Ar, B, C, N, F, P, Si, Cl, and O are available. The Extrion 400, on the other hand, is capable of producing beams of a wide range of ions from gas and solids source materials at energies ranging from 50 KeV to 400 KeV, and higher for multiply charged ion states.



In addition to excellent ion beam analysis, UAlbany has powerful ion implantation equipment, including a 400 KeV implanter and a beamline on the Dynamitron for MeV ion implantation. While ion implantation is available in some commercial laboratories, most of these will implant only one or a few ion species (for fear of contaminating their ion source). UAlbany has a history of implanting a large number of different elements.

As the IBL has a high current accelerator (Dynamitron) and heavy radiation shielding (rare at small accelerator labs), it can run deuterium beams that allow NRA for all the light elements. In addition, intense deuteron beams can be used to generate neutrons, another (nearly) unique capability at UAlbany. The IBL also has excellent facilities for NRA for hydrogen. This technique is practiced at only a few laboratories but continues to be important as more and more high technology thin films, where hydrogen plays an important role, continue to be engineered for application in microelectronics, medicine, and energy research. Particle acceleration capabilities extend from ion implantation through materials analysis and from low energies up to several MeV, with ion beam diameters as small as 1 micrometer.

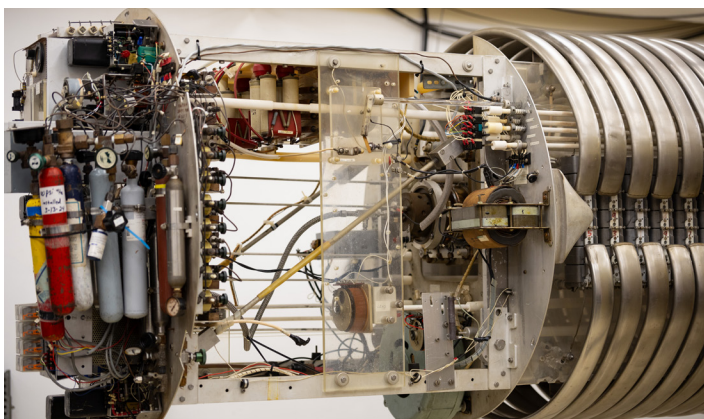
The foci of research activities include the study of chemical, physical and biological materials, including investigating electronic processes in



dielectric films, diffusion in minerals, Silicon optical and electronic devices, interaction of ion beams with semiconductor quantum dots, chemoradiotherapy, radiation damage to chromosomes, defects in semiconductors, surface properties of liquids and solids surfaces, and more.

Potential additional IBL opportunities include:

- **Thin-film Engineering:** investigating microelectronics, energy systems, and medical implants
- **Art History and Archaeology:** examining trace element fingerprints to determine the source of materials (many examples), identify materials used in art objects (authentication), and understand early technology
- **Chemistry:** studying the surface chemistry of ice, the repulsion of ions from the surface of liquids (Onsager), and the surface chemistry of glass
- **Forensics:** analyzing inks on paper or parchment for authentication, such as the Vineland map, Gutenberg bible, and Mormon documents
- **Fundamental Physics:** exploring the containment of ultracold neutrons in material bottles and the role of hydrogen in amorphous silicon
- **Crystallography:** profiling defects in single crystal samples and determining impurity lattice sites in single crystals
- **Radiation Effects:** producing MeV neutrons (defects, biological systems), studying the effects of MeV proton irradiation on semiconductors, and examining proximity effects from MeV clusters, e.g., (H)³⁺ ions



Director, IBL

The IBL Director position will be a nine-month faculty position with an administrative stipend in the College of Nanotechnology, Science, and Engineering with a possible joint appointment in the Department of Physics. The appointment includes an Empire Innovation Professorship award. In addition to financial support through start-up funds, this title may be used throughout the academic appointment at UAlbany.

The IBL Director will provide leadership to maintain and advance the IBL and its capabilities, facilitate collaborations, and promote research and scholarly activities involving ion beams. IBL users traditionally come from academia, industry, private companies, and national laboratories and have conducted research in diverse areas, including semiconductors, optical components, solar cells and batteries, cancer therapy, solar winds, radiation hardening of materials for use in space and aviation, search for dark matter, and surface characterization. The IBL offers training for students and junior and established researchers involving ion beams. The Director will also promote the IBL as an international facility serving researchers from diverse fields, with an emphasis on metrology and modifications of material properties of interest to the semiconductor industry and chip manufacturers.

As a faculty member in CNSE, the Director will commit to teaching, research, and service. They will carry a reduced teaching workload of one course per year while serving as IBL Director. They are expected to establish a vibrant research program that includes advising graduate students and postdoctoral scholars. The Director will also secure extramural funding to support both their individual research program and the advancement of the IBL. Current direct reports include staff scientists, a laboratory associate, and a lab technician.

The IBL Director will supervise the daily operations of the IBL. The related activities include:

- Provide leadership in managing a core user facility.
- Keep the IBL operating at an optimum level.
- Serve as the spokesperson and advocate for the IBL to its stakeholders and funders.

- Expand IBL's capabilities to include new techniques/methodologies, e.g., x-ray fluorescence spectroscopy and constructing a low-energy accelerator to simulate solar winds.
- Work with UAlbany researchers in developing projects that use the IBL.
- Work with industry and academic users/partners to determine and provide training in the IBL and ion beam methodologies for their research and development work.
- Facilitate the collaborative usage of the IBL by Federal laboratory researchers.
- Provide expertise in nuclear physics and materials science and engineering, both of which are essential to performing modifications of current equipment or developing new methodologies to meet users' needs.
- Work with researchers from different disciplines and IBL employees at different levels.
- Maintain awareness of and compliance with federal, state, and University safety regulations/compliance.
- For candidates from academia – a record of securing substantial extramural federal funding for research.
- A demonstrated record of innovation, consulting, and advising on applications of ion beams.
- An ability to develop inclusive and equitable relationships within UAlbany's diverse campus community and support diversity, equity, access, inclusion, and belonging relative to their role.

Preferred Qualifications:

- Experience in leading a vibrant research laboratory and promoting a shared facility to grow its use by researchers, ensuring timely accessibility and quality research support.
- Significant experience in the operations of accelerators and associated equipment and their use in research activities in various disciplines.
- Demonstrated ability to recruit users for core facilities or collaborate with researchers from different regions of the country and internationally.
- Record of advising graduate students and/or postdocs.
- Experience in working with researchers from the other categories of professional affiliation (i.e., academia, government, and industry).
- Demonstrated experience in effective teaching in scientific and engineering disciplines.

Minimum Qualifications:

- A Ph.D. in engineering, materials science, physics, engineering physics, or a related discipline from a college or university accredited by a U.S. Department of Education or internationally recognized accrediting organization. Candidates who do not hold the degree prior to applying will not be considered.
- Established national and international record of scholarly work that would justify the appointment as a tenured associate or full professor in the Department of Nanoscale Science and Engineering. Individuals with experience in academic, government, or industry research are all invited to apply, and appropriate consideration will be given to the different portfolios expected from the three.
- Expertise in accelerator physics and engineering and nuclear reactions with significant publications or other scholarly products that demonstrate knowledge, performance, and use of accelerator technology in one or more research areas.

Desired Characteristics:

- An innovative and inquiring nature that enables the individual to seek out collaborations and new research opportunities.
- Engaging and dynamic personality that enables the individual to advocate for and promote the IBL within and outside of the University to generate additional use of the facility.
- Strong interpersonal and communication skills.

University at Albany

The University at Albany, part of the State University of New York (SUNY) system, is a premier public research university located in Albany, New York. Founded in 1844, UAlbany has evolved into a comprehensive institution known for its strong academic programs, diverse campus community, and commitment to public service and innovation. UAlbany is ranked among the top universities in Forbes' "America's Best Public Colleges," and U.S. News & World Report consistently ranks many of Albany's graduate programs among the top 50 in the United States, including clinical psychology, criminal justice, library and information studies, public affairs, public health, sociology and social work. UAlbany's nine schools and colleges offer 50+ undergraduate majors and 150+ graduate programs.

College of Nanotechnology, Science, and Engineering

One of the most vibrant engineering and computer science schools in the United States, the College of Nanotechnology, Science, and Engineering inspires and educates a new generation of innovators as they prepare for exciting careers in environmental sustainability, artificial intelligence, computing, nanotechnology, microelectronics, engineering sciences, the semiconductor industry, and more. CNSE is home to the following departments:

- Computer Science (CS)
- Electrical & Computer Engineering (ECE)
- Environmental & Sustainable Engineering (ESE)
- Nanoscale Science & Engineering (NSE)



The College will next add a Department of Mechanical & Mechatronic Engineering (MME).

Established in 2004, the Department of Nanoscale Science & Engineering was one of the first in the country to focus on nanotechnology. This department is located in the Albany Nanotech Complex, which is immediately adjacent to the main UAlbany Uptown Campus and overseen by NYCREATES. CNSE is a founding member of NORDTECH, one of the Microelectronic Commons Hubs funded by the Department of Defense as part of the CHIPS and Science Act.



Michele J Grimm

Dean

Dean Grimm joined the University at Albany in August 2022. Prior to joining UAlbany, she was the Wielenga Creative Engineering Endowed Professor of Mechanical Engineering and Biomedical Engineering at Michigan State University. She previously spent 25 years at Wayne State University in Detroit, MI, where she established the undergraduate and graduate programs in biomedical engineering as well as the Department of Biomedical Engineering.

From 2016 through 2019, Dean Grimm served as Program Director at the National Science Foundation for three programs within the Engineering Directorate: Disability and Rehabilitation Engineering, Engineering of Biomedical Systems, and Biomechanics and Mechanobiology. She is an elected Fellow in the American Institute of Medical and Biological Engineering, American Society of Mechanical Engineers, and Biomedical Engineering Society.



Thenkurussi "Kesh" Kesavadas

Vice President for Research & Economic Development

Thenkurussi "Kesh" Kesavadas is the Vice President for Research & Economic Development at the University at Albany, where he leads a diverse portfolio of academic and sponsored research for the Carnegie R1-designated University.

At UAlbany, he has launched a new \$200 million artificial intelligence initiative that received \$75 million from the State of New York, paving way for a new \$20 million Center for Emerging AI Systems in collaboration with IBM. Kesavadas is serving as the co-chair of the SUNY-wide work group on AI research and infrastructure that is helping to chart the future of SUNY in this rapidly evolving field.

Before joining UAlbany in 2022, he served as the founding Director of the Health Care Engineering Systems Center at the University of Illinois at Urbana-Champaign from 2014 to 2022. Kesavadas was also a professor of Industrial and Enterprise Systems Engineering and held faculty appointments in the Department of Computer Science, and with the Carle-Illinois College of Medicine at the University of Illinois. He also served as a Fellow of the University of Illinois President's Executive Leadership Program (PELP). Kesavadas held the title of the Engineer-in-Chief of the Jump ARCHES endowment, where he managed a \$112.5 million endowment. From 1996 to 2014, Kesavadas was a faculty member in the Department of Mechanical and Aerospace Engineering at the University at Buffalo, SUNY. While at UB, in 1996, he founded one of the first virtual reality labs in the United States.

Kesavadas has widely published in the areas of medical robotics, AR/VR, digital twinning, AI, haptics, medical simulation and automation. He is also an inventor of products that have been successfully commercialized.

Albany, NY

The City of Albany, located on the banks of the Hudson River in the heart of the Capital District, is proud to be New York State's Capital City. Albany is a beautiful destination, offering valuable resources for higher education and sustainable living, vibrant and active urban centers, and desirable neighborhoods. Albany's deep-rooted history and heritage have shaped the city's urban footprint, complementing its natural setting along the waterfront and its reflection of historic architecture, major institutions, mixed neighborhoods, and diversity of residents.

Applications and Nominations

AGB Search is assisting the University at Albany with this search.

The position will remain open until it is filled. Applications should be submitted to the AGB Search Portal: [UAlbany ION Beam Director](#).

Candidates are requested to submit the following:

1. A curriculum vitae or resume:
2. A letter of interest that addresses the leadership opportunities and desired experiences and attributes in this profile, and
3. Contact information for five references (to be contacted at a later date with candidate's permission).

Nominations and expressions of interest in the Director of the Ion Beam Laboratory position are encouraged. Please direct them to IONBeamDirector@agbsearch.com or to the AGB search consultants listed below:

Kimberly Templeton, J.D., Principal,
kimberly.templeton@agbsearch.com

Jerry Gilbert, Ph.D., Executive Search Consultant,
jerry.gilbert@agbsearch.com

Anne Hoffman, Executive Search Associate,
anne.hoffman@agbsearch.com



AGB SEARCH

Advancing Higher Education Leadership

The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, or Clery Act, mandates that all Title IV institutions, without exception, prepare, publish and distribute an Annual Security Report. This report consists of two basic parts: disclosure of the University's crime statistics for the past three years; and disclosures regarding the University's current campus security policies. The University at Albany's Annual Security Report is available in portable document format [PDF] by clicking this link <http://police.albany.edu/ASR.shtml>

Pursuant to Executive Order 161, no State entity, as defined by the Executive Order, is permitted to ask, or mandate, in any form, that an applicant for employment provide his or her current compensation, or any prior compensation history, until such time as the applicant is extended a conditional offer of employment with compensation. If such information has been requested from you before such time, please contact the Governor's Office of Employee Relations at (518) 474-6988 or via email at info@goer.ny.gov.

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