



COLLEGE OF SCIENCE

CHEMISTRY

VIRGINIA TECH

STRATEGIC PLAN

2023-2030

DAVIDSON  
HALL

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# LOOKING AHEAD...

## OUR VISION

The Department of Chemistry will achieve world-class prominence by providing innovative and effective education, conducting research at the cutting edge, and transferring knowledge to the community.

## OUR MISSION

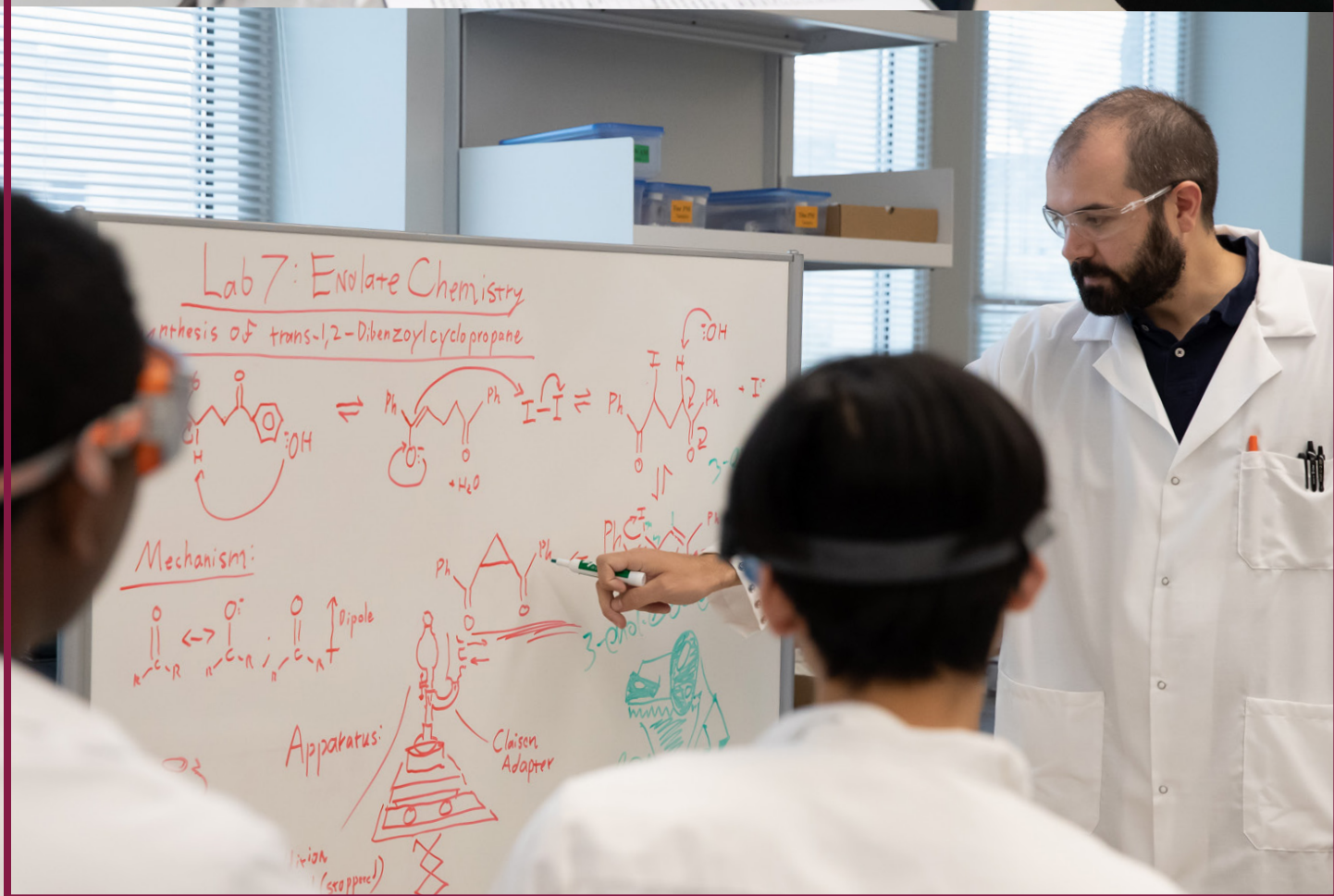
In the spirit of the University's motto **UT PROSIM** (*That I May Serve*), our research, instructional, and outreach missions are dedicated to serving the Commonwealth of Virginia, the nation, and the world. The Department of Chemistry is a world-class and global destination for diverse national and international talent. We perform cutting-edge chemical research that advances the discipline and helps address humanity's biggest challenges in an environmentally and ethically sound manner. We stimulate the intellectual curiosity of our students and provide them with a foundation that will allow them to pursue productive careers and become well-rounded citizens. We share our knowledge, expertise, and enthusiasm with society at large, from children in the early stages of their education to practicing professionals.



**Community and Collaboration** - The Virginia Tech Department of Chemistry is committed to attainment of a shared vision through teamwork.

**Innovation and Knowledge** - The Virginia Tech Department of Chemistry is committed to contributing, through basic and applied research and education, to the generation and sharing of new knowledge to the benefit of society.

**Creativity through Inquiry** - The Virginia Tech Department of Chemistry is committed to challenging the traditional boundaries of discovery and learning.





## WHO WE ARE...

The Department of Chemistry consists of **32 tenured or tenure-track faculty** (14 full professors, 9 associate professors, and 9 assistant professors), 1 associate research professor, 1 assistant professor of practice, and 12 instructors (1 advanced instructor, 4 senior instructors, and 7 instructors).

In addition, there are **26 permanent staff members** (AP faculty, technical, and administrative), 15 postdoctoral researchers, 130 graduate students, and 275 undergraduate majors.

Over **90%** of our tenured and tenure-track faculty direct active research groups with more than \$11M (total) in annual research expenditures.

## ...BY THE NUMBERS



## STRATEGIC PRIORITY 1

# ACHIEVE NATIONAL RESEARCH PROMINENCE IN CHEMISTRY

### ASPIRATIONAL VISION

*The Department of Chemistry will be nationally recognized as a leader in scientific research at the frontiers of Theoretical and Computational Chemistry, Energy Chemistry, Drug Discovery, and Materials for Medicine.*

### GOAL 1

Expand our research effort to a level competitive with peer land grant institutions.

### GOAL 2

Promote the scholarly effort of research faculty through award nominations and broad publicity for high-quality publications.

### GOAL 3

Invest in high-impact strategic research opportunities within our self-identified areas of strength.

# MILESTONES

1. Achieve a Top 50 U.S. departmental ranking in the US News and World Report Metrics-based Global Rankings by 2030.
  - a. Increase the number of publications by faculty in journals with IF > 10 year over year.
  - b. Increase total publications by 50% over the 2023 benchmark by 2030.
  - c. Increase the percentage of publications with an international collaborator to 25% of total papers published by 2030.
2. Increase tenure-track teaching and research faculty capacity and size.
  - a. Increase research space in the department by 7000 sq. ft. by 2025; 17,000 sq. ft. by 2030; and 24,000 sq. ft. by 2035 over fall 2023 capacity.
  - b. Reach 40 tenure-track teaching and research faculty by 2030 through:
    - i. Open searches that promote the departmental areas of strength- (1) theory/computation, (2) energy, (3) drug discovery, and (4) materials for medicine.
    - ii. Target of opportunity hires that contribute to our research strengths.
3. Increase the number of national and international awards won by faculty.
  - a. Increase the number of faculty that are fellows of prestigious national and international organizations, i.e., National Academy of Sciences, American Association for the Advancement of Science, American Chemical Society, Royal Society of Chemistry, American Physical Society, and equivalent.
4. Grow federally funded research expenditures to \$14 million by 2030.
  - a. Increase single investigator or small team grant expenditures to \$10 million by 2030.
  - b. Land 1-2 large center grants, defined as Centers for Chemical Innovation, Energy Frontiers Research Centers, or equivalent.



## STRATEGIC PRIORITY 2

# SUPPORT A WORLD-LEADING EDUCATION MISSION

### ASPIRATIONAL VISION

*The dedicated faculty of the Department of Chemistry will be globally recognized as exemplary chemical educators. We will prepare graduates to become leaders that tackle myriad current and future grand scientific challenges, including sustainable energy, finding cures for existing and emerging disease, and reimagining the field of chemistry through theory and computation. We offer purpose-driven student experiences designed to provide disciplinary depth and interdisciplinary context, while educating the whole person. The Department of Chemistry will work to ensure success in and accessibility of our degree programs and educational opportunities for all students.*

### GOAL 1

Provide a forward-thinking education program that prepares students to contribute and lead in a complex world.

### GOAL 2

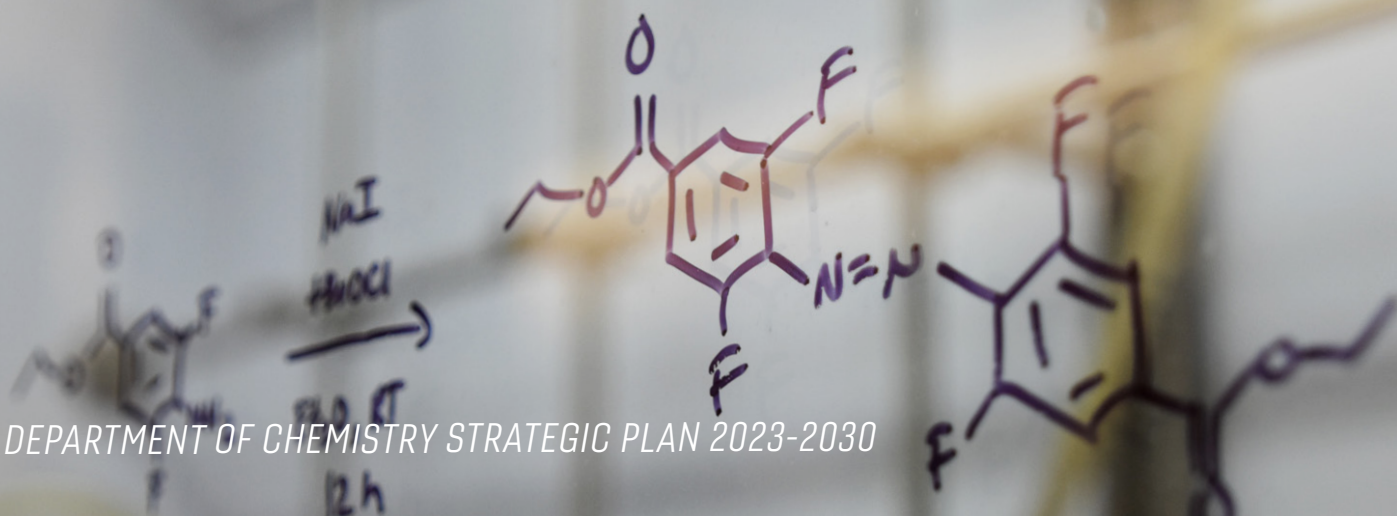
Attract, retain, and graduate an increasing number of students prepared to excel beyond the walls of the University.

### GOAL 3

Ensure that our innovative educational opportunities are accessible to all students.

# MILESTONES

1. Ensure that both lecture and laboratory curricula (including instrumentation) are reviewed and/or renewed every 7 years for majors and non-majors courses.
2. Track the career placement and trajectory of alumni (vide infra).
3. Grow the number of incoming chemistry majors to 150 by 2030 without decreasing quality.
4. Grow the number of chemistry graduate students to 200 by 2030.
5. Increase the retention rate of first-year chemistry majors to their second year to 70% by 2030.
6. Institute a mandatory bridge experience for undergraduate students by 2026.
7. Increase endowed funds for the support of the Department of Chemistry's academic mission.
  - a. Increase the number of scholarships for summer undergraduate research to six by 2030.
  - b. Add three graduate fellowships (summer GRA support) by 2030.





## STRATEGIC PRIORITY 3

# BUILD A CULTURE OF INCLUSIVE EXCELLENCE

### ASPIRATIONAL VISION

*The Department of Chemistry will become a destination for students, faculty, and staff through the cultivation of true community - a life-long community connected through shared values, where each contributor is engaged and has a voice in the decisions that affect them.*

### GOAL 1

Foster a supportive and encouraging working environment for students, faculty, and staff to promote career development and career satisfaction.

### GOAL 2

Strengthen the Department's connections with its community of students, alumni, and supporters to foster enduring relationships that result in advocacy and philanthropic support.

# MILESTONES

1. Institutionalize formal mentoring program guidelines (horizontal and vertical) for undergraduate students, graduate students, post-doctoral researchers, and teaching and research faculty (early career and mid-career).
  
2. Provide resources for staff development through Department, College, and University-supported programs.
  
3. Improve contact information for alumni and friends.
  - a. Develop and implement an exit survey to collect information from graduates prior to graduation and periodically thereafter.
  - b. Create an internal database of alumni with contact information.
  - c. Identify key regions or constituencies to be considered as growth areas for engagement.
  - d. Maintain an alumni database with 80% of recent graduates (class of 2024 and beyond) having valid contact information including email addresses.
  - e. Increase the percentage of past alumni in the database with valid contact information including email addresses year-over-year.

4. Increase engagement with alumni and students.
  - a. Identify what experiences, strategies, and communication vehicles are most effective for specific student and alumni constituencies.
  - b. Develop targeted communication that caters to specific student and alumni constituencies, e.g., increased digital communication.
  - c. Increase the number of and participation in Departmental-sponsored student and alumni events.
  - d. Increase the Departmental Annual Fund giving to \$85,000 by 2030.
  - e. Increase the number of Giving Day donors by 10% year-over year.
  - f. Reach 20% alumni giving by 2030.





## STRATEGIC PRIORITY 4

# PROMOTE THE SAFE AND RESPONSIBLE PRACTICE OF CHEMISTRY

### ASPIRATIONAL VISION

*The Department of Chemistry will build a safety culture that provides a healthy working environment for all students, faculty, and staff.*

### GOAL 1

Develop and integrate an up-to-date safety curriculum in all degree programs.

### GOAL 2

Ensure a safe environment is maintained in research laboratories.

# MILESTONES

1. Assess current safety practices in undergraduate laboratories to ensure up-to-date measures consistent with American Chemical Society recommendations are in place.
2. Incorporate the use of safety data sheets and standard operating procedures in the curriculum.
3. Progressively increase near-miss safety reporting in the Department to create a culture in which all near-miss incidents are easily and routinely disclosed.
4. Increase the number of laboratory self-audits to ensure labs are evaluated quarterly.
5. Decrease the overall number of defined critical lab violations year-over-year.
6. Establish a safety recognition program by 2025.

