

# Clarkson

A woman with brown hair tied back, wearing safety goggles and a white lab coat, is focused on her work in a laboratory. She is using a white and black pipette to transfer liquid into a multi-well plate. The plate is held in a green rack. In the background, there are various laboratory equipment, including a metal stand with a clamp and a beaker. The lighting is bright, highlighting the woman's concentration and the precision of her work.

2018 PRESIDENT'S REPORT

Women in STEM  
1968-2018

## A MESSAGE FROM THE PRESIDENT



(l-r) Nancy Conrad, president of the Conrad Foundation, Tony Collins and Margaret Honey, CEO & president of the New York Hall of Science, in front of NYSCI's space exhibit

## Women in STEM

As a technological university in a nation whose continued economic preeminence is dependent on a significant and highly qualified technological workforce, Clarkson is committed to changing and expanding both **how** we educate and **whom** we educate. This will require us to build an even stronger pipeline of those entering technical fields.

Delivered with the *President's Report*, we have included a reprint of the first *Ignite Annual Report*, which provides background for a major new commitment to **how** we educate. All students at Clarkson are challenged to reach beyond the comfort of their immediate groups and collaborate with students from other Clarkson schools and majors. Through the resources and framework provided by the Ignite initiative, each student obtains the skill set, mindset and experiences needed to become a leader and innovator.

This fall, in a commitment to building a new pipeline that will draw students to technological education, Clarkson partnered with the Conrad Foundation, creating scholarships that provide high school students participating in the Conrad Challenge access to Clarkson's ecosystem of innovation. High schoolers competing in the Conrad Challenge work in teams to devise solutions to the sustainability challenges society is facing. In addition to collaborating with the Conrad Foundation, Clarkson will work closely with the New York Hall of Science, located in Queens, New York.

A huge opportunity exists to increase the technological workforce and **whom** we educate by increasing our appeal to more than half the population — women. During a recent visit to campus as a New Horizons in Engineering speaker, Leah Jamieson, the Ransburg Distinguished Professor of Electrical and Computer Engineering at Purdue University and a national engineering education expert, spoke of the challenges inherent in attracting students to engineering — and then retaining them. She also stressed that while progress has been made toward engaging girls and women in STEM fields, more remains to be done.

Around the nation, the average number of undergraduate women in engineering programs has stagnated; the number of students from underrepresented groups is even lower. Professor Jamieson warned that this issue is critical, as the quality of innovation is a function of diversity. Clarkson has been steadily progressing with educating women in STEM, as evidenced by the women we introduce within these pages — women who continue to enrich the fabric of the Clarkson community.

Enabling change for the better within technological education, Clarkson leads in cultivating an inclusive community that is united by the spirit of innovation for the greater good.

Tony Collins  
President

# Clarkson

## PRESIDENT'S REPORT 2018

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### Cover Photo:

*Honors student Madison Ranslow '18 (biology) working on protein purification in the Biochemistry & Biotechnology Laboratory at Clarkson*





### 2018 NCAA Banner Raising

For the second year in a row, the Clarkson women’s hockey team celebrated their national championship victory with a banner-raising in Cheela Arena. The Golden Knights won their third national championship title in five years and second consecutive NCAA title.



### ROTC Commissioning

The Air Force ROTC Detachment 536 and the Army ROTC Golden Knight Battalion commissioned 12 cadets at this year’s spring commissioning on May 12. Two cadets were commissioned into the U.S. Air Force, and 10 cadets were commissioned into the U.S. Army. Notable among the cohort was Army ROTC cadet and biology major Hayley Elliott ’18, the first female armor officer commissioned from Clarkson.

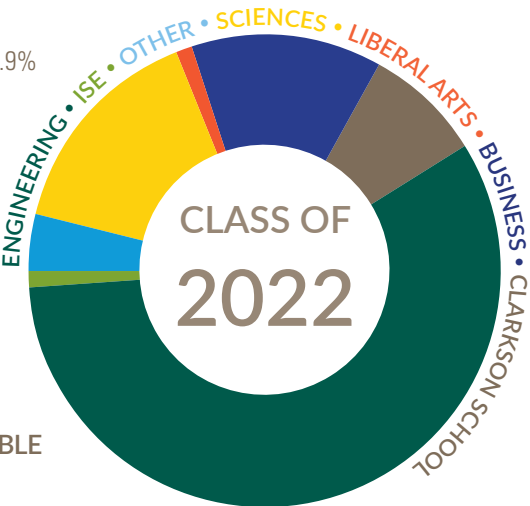
### Two New Bachelor’s Degrees

The **Data Science** program provides students with the opportunity to develop an interdisciplinary, data-focused skill set and apply those skills to real-world challenges. The program provides preparation in mathematics, statistics, computer science and data processing.

**Mathematical Economics** focuses on mathematics, economics and the interaction between these two disciplines, and enables students to apply analytical techniques to contemporary issues in economics and finance.

### CLASS OF 2022 PROFILE

- CLASS SIZE — 797
- FEMALE — 32%
- UNDERREPRESENTED — 16.9%
- FIRST-YEAR MAJORS:
  - ENGINEERING — 58%
  - SCIENCES — 15.5%
  - BUSINESS — 13%
  - CLARKSON SCHOOL — 8%
  - OTHER — 4%
  - LIBERAL ARTS — 1%
  - INSTITUTE FOR A SUSTAINABLE ENVIRONMENT — 1%



## TOP TEN BEST COLLEGES FOR PRODUCING ENGINEERS

— *IndustryWeek* 2018

## TOP 25 STEM COLLEGES

— *Forbes* 2018

### NEW LEADERSHIP



**Chuck Thorpe** has been named dean of the School of Arts & Sciences, transitioning from his prior role at the University as senior vice president and provost.



**Augustine Lado**, the Richard '55 and Joy Dorf Chair in Entrepreneurship and Innovation, has been appointed the interim dean of the David D. Reh School of Business.



**Matthew Draper '02, MBA'03** has assumed the position of interim vice president for Development & Alumni Relations while continuing in his current roles of executive director of the Shipley Center for Innovation.



**Hugo Irizarry-Quinones** has been named the associate dean of the Wallace H. Coulter School of Engineering and is based at the Capital Region Campus. He joined Clarkson in 2016 as an associate professor, teaching fracture mechanics.



### Magic Grant Funds DNA Forensic Software Research

Associate Professor of Computer Science Jeanna Matthews and her team, comprised of experts from various universities and professions, have been awarded the Magic Grant from the Brown Institute for Media Innovation for their project, "Decoding Difference in DNA Forensic Software."

The grant, part of a collaborative grant program between the Columbia Journalism School and Stanford School of Engineering, will fund the team as they compare DNA forensic software and determine how, when and why the various types of software produce different results. Discrepancies in such results can lead to serious consequences in the justice system, particularly in cases in which a suspect is both incriminated and ruled out by forensic results from different software programs.

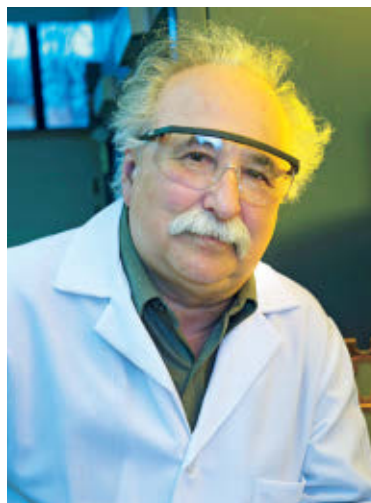
Their work will ultimately assist the President's Council of Advisors on Science and Technology in the independent testing of DNA forensic software.

### International Team Receives Human Frontier Science Program Funds

Evgeny Katz, professor and Milton Kerker Chair in Colloid Science, was awarded funding from the Human Frontier Science Program for the research project, "Controlling cellular biochemistry with electronic signals — a step towards bioelectronic hybrids." The award will support research into integrating electronics and living systems — namely,

regulating biological systems electronically at a cellular level.

The Human Frontier Science Program supports leading-edge international research and collaboration in the life sciences. Katz and his team are working with two groups of researchers, one at the University of Queensland, Australia, and the other at the Catalan Institution for Research and Advanced Studies, Spain. Each group contributes by addressing the project from the direction of its own expertise: molecular biology, electrochemistry and, Katz's specialty, bioelectronics.







## Rising Star

Assistant Professor of Chemistry & Biomolecular Science Mario Wriedt has received the National Science Foundation's prestigious CAREER Award, which includes \$600,000 in federal grant funding, for his design of metal-organic frameworks (MOFs). MOFs are a new class of advanced porous materials that can be used for carbon capture from flue emissions and the small-molecule separation of petroleum products.

Wriedt joined the faculty of Clarkson in 2013. He holds a PhD in chemistry from Kiel University, Germany. He has received numerous awards and fellowships and has authored more than 65 research papers in peer-reviewed journals.



## Fashion Meets Function

Earlier this year, Dami Adepoju '13 launched Fini Shoes (finishoes.com), a customizable shoe product, with the help of Clarkson's Shipley Center for Innovation.

Adepoju says the goal of Fini Shoes is to reinvent footwear.

He's doing that through a unique, customization element. The shoe allows the wearer to add multiple add-ons through a seamless and minimal zipper concept so the wearer has the ability to switch

out part of their shoe and turn it into a completely new shoe.

Originally from Abuja, Nigeria, Adepoju runs his business out of New York City. He is working on a master's degree and has set his sights on making Fini Shoes a global success.

Adepoju says the unique community Clarkson offers is critical to the founding and success of his company. "The Clarkson faculty, staff and students are a family who comes together to help and support you in every way possible."



## Olympic Medal-Winning Luge Sled Has Clarkson Technology Behind It

*By Abraham Kenmore*

Douglas G. Bohl is clear that credit for winning the first-ever men's single luge medal belongs entirely to Chris Mazdzer, an athlete from Saranac Lake, New York, who won a silver medal at the 2018 Pyeongchang Winter Olympics in South Korea.

But Mazdzer won that medal on a sled designed in part by Bohl and his colleagues at Clarkson University.

"(Chris) did the hard work; we just applied a little math," Bohl said.

An associate professor of mechanical and aeronautical engineering, and a luge racer himself, Bohl has worked with the United States Luge Association and, more recently, with former Olympian slider and current sled builder Duncan Kennedy, to improve the luge sleds. While the hard work for the victory may have been done by Mazdzer, any improvements to the sled can help give an edge in a sport with razor-thin margins of victory.

"Luge is timed to one-thousandth of a second; it's one of two winter sports that are timed to that precision," Bohl said. "When you're talking about differences of thousandths of a second, there's not a lot of margin."

Bohl worked with his colleague Brian Helenbrook, Paynter-Krigman Endowed Professor in Engineering Science Simulation, and master's student Bryan Heckendorf '11, MS'14 before the 2014 winter Olympics. They concentrated specifically on the shell, the fiberglass platform that sliders lie on as they race down the ice track.

Moreover, the engineers had to build a model that included both the sled and the slider to get an accurate picture before they ran computer models.

"Chris was our test case," Bohl said. Using Mazdzer's dimensions, they were able to build a model they could test for aerodynamics.

The engineers then had to work out how to optimize the two elements of the sled — how streamlined it was, and, more importantly, how comfortable the slider would be while operating the sled.

Reprinted with permission from the *Watertown Daily Times*.



# Authenticating Your Identity Is a Keystroke Away

## New Research Aims to Improve the Security of User Authentication Through Behavioral Biometrics

By Shelia Yong

“Yahoo, Equifax, Target. These names come up together now because they have all been subject to massive data breaches,” says Mahesh Banavar, an assistant professor in electrical and computer engineering.

Banavar is part of a research team that is working on a novel approach to overcome security vulnerabilities and protect against digital data breaches. His collaborators include Stephanie Schuckers, Paynter-Krigman Endowed Professor

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“The novelty of our algorithm is that it continuously authenticates the user, rather than a single scan of the fingerprint,” says Prof. Stephanie Schuckers, an expert in biometric computer security.

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in Engineering Science, and Daqing Hou, director of software engineering and professor of electrical and computer engineering. Their proposal, “Next generation behavioral biometrics:

Capturing more application usage behavior,” won the Nicklas-Ignite Research Fellowship at Clarkson’s inaugural Ignite Research Fellowship Competition.

With \$125,000 in funding, the Fellowship will kick-start their research, allowing them to obtain data and perform preliminary research for future external funding applications.

Information vulnerable to data breaches includes names, addresses, dates of birth and social security numbers. Users of many websites are commonly asked to submit these details online when they set up new accounts or forget their passwords.

The team’s solution to overcome this vulnerability is to replace the existing knowledge-based authentication system with a continuous, behavior-based one. Rather than simply requiring passwords or fingerprint scans, this new behavior-based authentication system will analyze how we interact with our keyboards, mice and other mobile devices and compile data that can identify a specific user. By monitoring these unique usage patterns, this new authentication system will learn who we are and verify our identities before allowing us to continue accessing our online accounts and apps on our devices. The team has already amassed a database of approximately 12 million keystrokes and is currently collecting additional data on mouse and mobile device usage patterns.



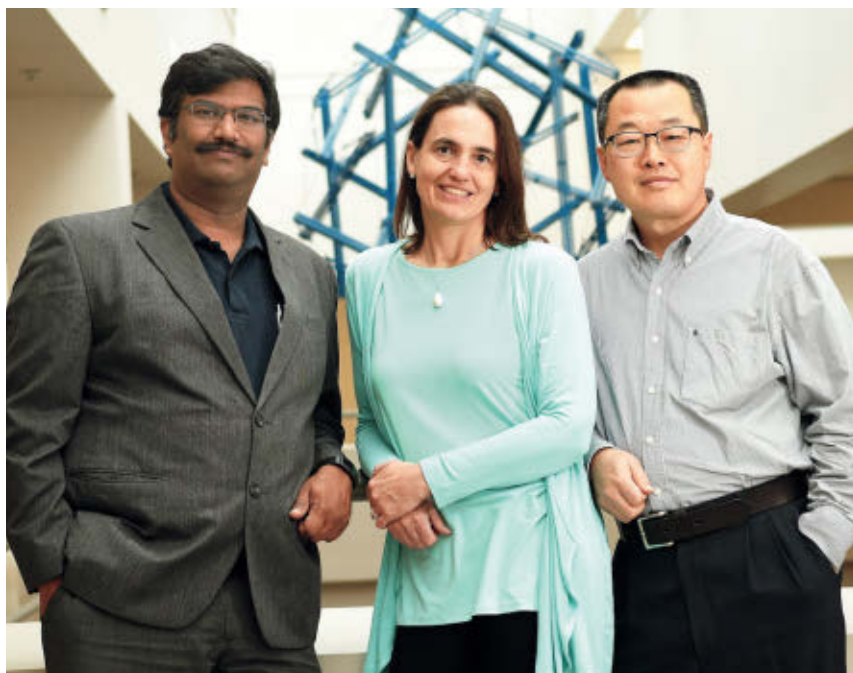


To demonstrate the feasibility of their proposal, the investigators used their keystroke data to test their keyboard algorithm. In this scenario, users enrolled themselves by each typing 10,000 characters on the keyboard.

Using the keyboard algorithm alone, the investigators could detect an intruder with 97 percent accuracy within three minutes. “Still, we aim to shorten this lead time in order to provide denser protection to the user,” says Hou.

What happens if an enrolled user is unusually slow in typing because of an injury or when the user makes mistakes? The team believes that their algorithm will still be able to verify the user’s identity. “The underlying algorithm looks at more than just the typing speed. It also analyzes the user’s more subtle traits, such as relative speeds between different keystroke patterns,” Hou says. Future research will investigate such scenarios more closely.

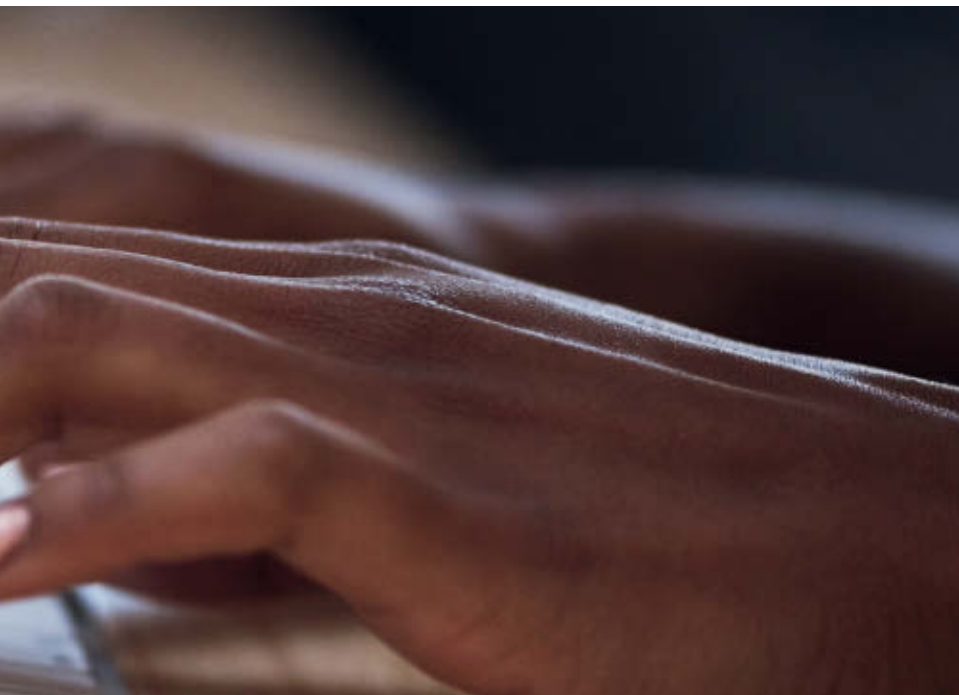
The researchers plan to incorporate safety features and combine these features with traditional biometrics and with protections that lock a user out if the algorithm detects a certain number of mistakes in succession. This measure is similar to what is commonly used in classic authentication methods, in which a user is locked out of an online account after entering the wrong password multiple times.



*(l-r) Profs. Mahesh Banavar, Stephanie Schuckers and Daqing Hou*

The team also plans to include a “transfer learning” feature in the algorithm that will allow user profiles to be transferred from one device to another, even when the types of data collected are different, such as keystrokes and mouse usage versus swipes and gestures.

The researchers are collaborating with several companies through Clarkson’s Center for Identification Technology Research (CITeR), a National Science Foundation Industry/University Cooperative Research Center of which Schuckers is the director. The investigators believe that these collaborations will help them fine-tune their algorithm design and help protect data in today’s digital world.



### The Clarkson Ignite Research Fellowship Program

In 2018, Clarkson launched a competitive pilot grant program to foster synergistic campus-wide research collaborations that will spur innovation in four multidisciplinary research focus areas: advanced materials development, healthy world solutions, data & complex systems analytics and next-generation health technologies. The aim of this program is to drive innovative research that can impact society at the national and international levels.



Prof. Michelle Crimi '95

## Cleaning Up Contamination

**Professor Michelle Crimi '95 uses chemistry and technology to clean contaminated groundwater.**

*By Suzanne F. Smith*

The legacy of unregulated waste disposal practices is visible all around us. We can see it in algae blooms on our lakes, in fish deemed unsafe to eat and in the depletion of biodiversity in contaminated areas.

But one effect we can't see is the pollution of groundwater, which moves underground through spaces and fractures in soil, sand and permeable rock formations called aquifers. Aquifers act as reservoirs for groundwater that can be brought to the surface by natural springs or drilled wells.

More than 50 percent of the U.S. population relies on groundwater for drinking, and it is also essential to agriculture. Yet, today, there are an estimated 30,000 to 50,000 sites in the U.S. with groundwater contamination.

It is a story, says Michelle Crimi '95, of unintended consequences.

"Most of these sites are historical legacies," she says. "People in the past weren't thinking about the long-term environmental effects of dumping chemicals onto the ground or burying hazardous waste in storage containers that might someday leak."



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“It’s like working in a black box. You can’t see what’s happening underground. You can’t see the aquifer or the contaminated water and soil. Because of that, groundwater remediation is as much an art as it is engineering.”

— Prof. Michelle Crimi '95

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“Hazardous waste management practices have improved quite a bit since the 1970s, thanks to regulation and raised awareness. Today, people are taking hazardous materials to special treatment facilities rather than releasing them directly into the environment.”

Crimi is a professor and the director of the engineering and management program at Clarkson. She has spent her professional career developing technologies for effectively treating chemical pollutants in groundwater. Most of her research is funded by the Department of Defense and other military and governmental agencies.

Much of Crimi’s remediation work has focused on developing in situ chemical oxidation (ISCO) technology to remediate organic contaminants. ISCO involves introducing oxidants, such as permanganate or persulfate, into the subsurface in order to break down contaminants or convert them into harmless byproducts. In fact, she co-authored the first book on the subject: *Principles and Practices of In Situ Chemical Oxidation Using Permanganate*.

### Working in a Black Box

Early in her career, Crimi worked on projects to remove chlorinated solvents from former military sites. Chlorinated solvents, which adversely affect human health, are industrial chemicals used widely in metal cleaning and dry cleaning, as well as in the production of thermoplastics and polyvinylchloride (PVC) products.

One of these sites is located at the Marine Corps Base Camp Lejeune in Jacksonville, North Carolina. Camp Lejeune was established in the early 1940s as a military training facility. Forty years later, water supply systems on the base were found to be contaminated with high concentrations of industrial solvents. The chemicals were traced to spills and improper storage at an off-base dry cleaning business.

Cleaning groundwater is difficult and expensive. Because pumping contaminated water out of the ground to treat it on the surface is particularly costly, the most efficient and, therefore, preferred method of removing contaminants is to do so underground.

But underground treatment poses its own challenges.

“It’s like working in a black box,” says Crimi. “You can’t see what’s happening underground. You can’t see the aquifer or the contaminated water and soil. Because of that, groundwater remediation is as much an art as it is engineering.”

It was precisely this speculative element that appealed to Crimi when she was an undergraduate at Clarkson studying industrial hygiene and environmental toxicology. “I took a Hazardous Waste Management class with Professor Susan Powers ’83, MS’85 and immediately got hooked.”

Crimi later received a master’s degree in environmental health from Colorado State University and a PhD in environmental science and engineering from Colorado School of Mines. She joined the faculty of Clarkson in 2008 and currently holds a joint appointment in the Institute for a Sustainable Environment and the Reh School of Business.

### New Contaminants, New Technologies

Today, Crimi works with both military and industrial partners to develop innovative, cost-effective technologies to improve groundwater remediation. For example, she is collaborating with Arcadis, a global engineering firm, on the development of horizontal wells packed with a solid form of treatment media to create an underground pathway through which contaminated water flows in and clean water flows out.

*Small-scale horizontal test well on campus*



Crimi and her research team tested the company's patented technology in the lab and then built a small-scale version to pilot test on campus.

Modeling a process is an important first step in developing and testing new technologies like these, which is where Guangming Yao comes in.

Yao is an associate professor of mathematics at Clarkson whose research focuses on modeling and solving partial differential equations using computers. While much of her work is theoretical, she is collaborating with Crimi to develop optimal remediation processes by utilizing numerical simulations.

Yao and PhD candidate Wen Li MS'17 are measuring the "capture zone" of water being cleaned in Arcadis' horizontal reactive media treatment well. The capture zone is the amount of water captured by and cleaned through the well.

The size of the zone depends on the radius of the well, the type and quantity of the treatment media used and the ease with which water moves through the media. "The goal is to maximize the water throughput using the smallest amount of treatment media in

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*"The goal is to maximize the water throughput using the smallest amount of treatment media in order to make the process more cost-effective."*

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*— Prof. Guangming Yao*

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order to make the process more cost-effective," says Yao.

"Michelle tells me the key treatment media properties, and I simulate the amount of water captured and treated. With this information, we can figure out the optimal placement of horizontal wells at a site and when the treatment media will need to be replaced."

But not all chemical contaminants can be removed using oxidants or other conventional groundwater and soil remediation systems.

Per- and polyfluoroalkyl substances (PFAS) are a class of synthetic chemicals used more recently in food packaging, nonstick cookware (Teflon), water-repellant clothing and stain-resistant carpets. PFAS are linked to serious health concerns like tumor growth and disrupted hormone production. Humans can be exposed to these chemicals through the water we drink and the air we breathe.



(l-r) Graduate student Wen Li and Prof. Guangming Yao

"PFAS are persistent in the environment," says Crimi, "and require a more aggressive approach to remediate."

One approach that looks promising is the use of plasma.

Selma Mededovic Thagard, associate professor of chemical and biomolecular engineering, has pioneered a water purification process by converting polluted water from liquid to vapor, which is then further heated until it transforms into plasma. The conversion occurs in a plasma reactor and generates an electrical field so powerful that it can purify gallons of water in minutes. It is a process that requires much less energy — and far less money — than traditional purification methods.

Crimi is collaborating with Mededovic Thagard, as well as with Thomas Holsen, the Jean S. Newell Distinguished Professor of Engineering, to develop a plasma process to clean groundwater.

With funding from the U.S. Air Force, Mededovic Thagard and Holsen built an electrical discharge plasma reactor to field test on groundwater contaminated with PFAS from firefighting foams used in military training.

Crimi is also looking to treat PFAS-contaminated groundwater underground directly where contamination occurs by building a reactor that can be deployed in a horizontal well. Crimi and Fiona Laramay TCS'11, '14, a PhD student in environmental science and engineering, founded the startup company RemWell to commercialize the InSRT reactor, which features their patent-pending technology.

Last November, the company was one of seven winners in a commercialization competition sponsored by FuzeHub, a nonprofit organization that helps small and mid-sized manufacturers.

Thanks to Crimi and her quest to remediate contaminated groundwater, the prospects of clean water in the future look much clearer.



# Saving Shorelines With Solutions Drawn From Nature

**Clarkson Professor Weiming Wu uses computational modeling to understand waves, surges and sediment transport along coastal areas and rivers.**



Nowhere are the effects of climate change more visible than in coastal areas. As ocean temperatures rise, the strength and intensity of tropical storms and hurricanes are increasing, battering shorelines with gusting waves and storm surges.

That means more flooding and coastal erosion. In Louisiana, for example, coastal wetland loss from 1985 to 2010 has been estimated at some 16 square miles per year — the equivalent of one football field lost every hour.

The loss of wetlands is significant in other ways too. Wetlands are a productive and active ecosystem that supports a tremendous diversity of plants and animals. They protect shorelines from wave action, reduce flooding and improve water quality.

Weiming Wu, the James K. Edzwald Professor of Water Engineering, is an expert in hydraulic engineering; his research focuses on the hydro-morphodynamics (changes in the physical features and environments) of rivers, estuaries and coastal waters.

For more than 25 years, Wu has been developing computational techniques to describe flow, sediment transport and surge, as well as dam/levee breaching. For the last decade, he and his collaborators have been refining models to better understand current and wave attenuation in vegetated rivers and coastal waters. Last August, he presented some of their findings as a keynote speaker at the 6th International Conference on Estuaries and Coasts.

“Traditionally, coastal protection has relied on hard structures such as sea walls, levees and jetties,” he says. “But these can alter hydrodynamic and morphodynamic processes and have unintended consequences for the ecosystem.”

Today, “greener” protections, such as wetland vegetation and coastal forests, are getting more attention. “As waves travel through a water body with vegetation, like salt marshes and mangroves, their energy is reduced. So coastal ecosystems play an important natural role in reducing incoming wave energy and increasing shoreline stability,” he says.

For Wu, understanding how hydraulic forces are affected by wetlands is key to finding solutions for mitigating coastal erosion, better protecting coastal communities and preserving tourism and commercial fishing.

Wu and his research team conducted fieldwork in salt marshes along the Mississippi and Louisiana coastlines during tropical storms, accumulating wave data and measuring flow velocity. They also measured the height, stiffness and thickness of the grass, as well as the density of the vegetation.

The researchers developed a series of numerical models to quantify wave dissipation and surge reduction under a variety of vegetation configurations, wave heights, water depths and shore slopes.

“The more we can understand how vegetation interacts with local geography and water dynamics in areas adversely affected by climate change, the better we can find location-specific solutions drawn from nature to protect these areas,” says Wu.

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*The dense roots of mangroves help protect shorelines by reducing the energy of waves.*





*At Reunion in July, alumni donors and Clarkson community members broke ground for the Cheel project. (l-r) Rosemary Munter, Lynn Kassouf '76, Thomas Kassouf '74, John Munter '59, Tony Collins, Casey Jones, Scott Smalling, Steve Yianoukos '72, Robert Empie '68, Matt Desrosiers and Jeff DiStefano '78*



*Architectural drawing for the exterior renovation of Cheel Campus Center and Arena*



# Clarkson Community Supports Cheel Renewal

By Michael P. Griffin MS'00

More than three decades after Clarkson students spearheaded a drive to bring the first student center to the hill campus, the student body is again in the vanguard with generous alumni and other donors to add and expand student facilities within the Cheel Campus Center. The renewal will also maintain Cheel Arena as one of the top college hockey venues in the nation.

The Cheel Campus Center and Arena expansion and renovation is a major overhaul that will modernize the building's infrastructure and expand its footprint. It will add state-of-the-art fitness facilities and educational opportunities and improve the hockey complex while supporting the University's sustainability goals and bringing further economic benefits to the surrounding community.

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*"The Cheel project will result in a greener campus.*

*Tremendous energy savings will enable us to fulfill another aspect of the University's vision of a sustainable future."*

*— Matthew Draper, Interim Vice President for Development & Alumni Relations  
Executive Director of the Shipley Center for Innovation*

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Back in 1987, when the student body voted to implement a campus improvement fee to partially cover the cost of Cheel's construction, Clarkson hockey and Division I (D-I) athletics were markedly different. Clarkson had only a men's D-I hockey team, and the new facilities in Cheel were a tremendous improvement over Walker Arena, built half a century before.

Today, Cheel hosts not only the men's D-I hockey team, but now a three-time national champion women's team as well. Twenty-first century athletic facilities are needed to keep up with the rest of the D-I world and attract the best student-athletes.

As "Clarkson's front door" to the world, Cheel also serves as a venue for Admissions Open House,

Orientation, Commencement and numerous student and community events each year.

With support from students via their campus improvement fund, as well as from alumni and friends, the project began this fall. The Dormitory Authority of the State of New York has also contributed to the project, awarding \$3.45 million through the New York state Higher Education Capital Matching Grant Program. The first components of the project include an addition to the front of Cheel to house athletic and wellness facilities and provide a hub for the professional development of students participating in internships with Clarkson's facilities group.

The athletics and wellness facilities on the main level in the newly created space will feature a climbing wall and world-class collegiate fitness facilities for use by the entire campus community.

Other renovations will include a new D-I weight training area and a women's D-I hockey locker room suite on the lower level. A modest expansion on the southwest side will support improved circulation, a loading area and additional room for expanded HVAC systems.

After Commencement 2019, renovations to the D-I hockey areas will begin. The hockey rink will be replaced, including the concrete floor and all tubing. New dasher boards, glass and netting will be installed for improved safety. The building's energy requirements are expected to be significantly lowered.

When all phases are complete, more than 30,000 square feet will have been added to the building.

The new facility is expected to be completed before April 1, 2020, with no disruption to the men's and women's hockey game schedules. Cheel will also be among the venues for the Adirondack North Country Global Sports Commission to use in the 2023 World University Games.

Both the Cheel Campus Center and Cheel Arena are named for the late Helen Snell Cheel, who was the principal benefactor for both facilities. Cheel was the daughter of Bertrand H. Snell, the congressman who served as a Clarkson trustee for 47 years.

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*To donate to future phases of the Cheel Campus Center and Arena expansion and renovation, contact Steven Smalling, director of major gifts, at [sssmalli@clarkson.edu](mailto:sssmalli@clarkson.edu) or at 315-268-4368.*



# 2018 NCAA National Champions

## Clarkson Women Redefine Hockey Greatness With Third National Title

During the 2017-18 season, the Golden Knights skated to their second consecutive NCAA title and third National Championship in the past five years, with overtime victories vs. Ohio State (1-0) and Colgate (2-1) at the Frozen Four held at Ridder Arena on the campus of the University of Minnesota on March 16-18.

The Golden Knights women's hockey team finished its third championship season in the 15-year history of the program with a 36-4-1 overall record, including a 19-3 first-place ECAC Hockey mark.

With this win and record, the Golden Knights have secured their place among the most dominant programs in the history of NCAA Division I (D-1) Women's Hockey.

Photo: Jim Rosvold





## Unstoppable

Goaltender Shea Tiley '18 helped lead the Golden Knights to back-to-back championships and was named Clarkson's MVP of the 2017-18 season.

She started 40 of the 41 games, playing the most minutes (2405:32) of all D-I goaltenders. She led the country in victories (35) and winning percentage (.888) and tied for most shutouts (12). She ranked first in D-I in save percentage (.945) and fourth in goals against average (1.20).

Tiley completed her collegiate career as the Golden Knights all-time winningest goaltender with 114 wins, including 36 shutouts.

She was named ECAC Goaltender of the Year twice, 2018 Frozen Four Most Outstanding Player, First Team All-USCHO, First Team All-American and a top-10 finalist for the 2018 Patty Kazmaier Award, which recognizes the best NCAA female hockey player.

In August, Tiley was one of four former Golden Knights selected in the 2018 Canadian Women's Hockey League (CWHL) draft. She was a first-round pick by the Toronto Furies.



*Shea Tiley '18, GK's all-time winningest goaltender*





*(l -r) Karen Politica, Betsy Tiemann, Joyce Bator, Mary Ann Schernau, Jill Schoof and "Big Brother" Paul Pinard*



# THE TECHETTES OF 1968

*"Taking a leaf from its past, Clarkson College of Technology in Potsdam, N.Y., has admitted nine coeds after nearly 60 years as a school for men only."*

— *The New York Times*, September 13, 1964

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*By Jeff Macharyas*

For much of the 20th century, Clarkson had been considered a "men's college," even though women had been a part of it since its inception in 1896. In fact, it was Thomas S. Clarkson's three sisters, Lavinia, Frederica and Elizabeth, and his niece, Annie, who named and endowed a building in his honor that was to become the Thomas S. Clarkson Memorial School of Technology. Clarkson was later known as Clarkson College of Technology; in 1984, it became Clarkson University, although the rallying cry remains "Let's Go Tech!"

Clarkson admitted 17 men and women in its first year. The women were to study domestic science. Ethel Vance, however, did earn a certificate in mechanical drawing in 1897. In the 10 years that followed, 45 women enrolled in the Department of Domestic Sciences in order to qualify for teaching positions. The first Clarkson catalog proclaimed, "Both sexes are admitted on equal footing to the privileges of the school."

That would change in 1907 when Potsdam State Normal School (later SUNY-Potsdam) offered a similar curriculum. Women were drawn there and would no longer be a part of the Clarkson student body for more than a half century.

The early 1960s were tumultuous times for colleges and the world. The space race was on, a president had been assassinated, single-sex college enrollment suffered its biggest decline and the war in Vietnam was ramping up.

Times were changing, and Clarkson was changing with them. In 1963, Norma Wagner '65 would be the first woman to return to Clarkson since 1907, transferring from Mohawk Valley Community College in Utica. She graduated from Clarkson with a degree in mathematics on June 6, 1965. Norma would usher in a new era of coeducation at Clarkson.

*The female Clarkson students were known at that time as “Techettes,” as their male counterparts were known as “Techers.”*

### Who Pushes the Button?

Friday, October 4, 1957, was a momentous day. Not only did *Leave It to Beaver* make its broadcast debut, but, at 10:29 p.m. Moscow time, the Soviet Union launched the first artificial satellite into space. It was named Sputnik — Russian for “satellite.”



(l-r) Karen Politica, Clarkson President William Whitson and Jill Schoof

“Who pushes the button that launches the satellite?” fifth-grader Jill Schoof ’68 asked her teacher, Miss Oades, the following Monday.

“Electrical engineers,” Miss Oades replied.

It was at this moment that Jill decided a future as an electrical engineer was the right path for her.

Jill was born with an interest in engineering and credits her grandfather, a self-taught inventor and entrepreneur, for igniting that spark. “Over early morning breakfasts, we would talk about physics and its practical applications to machinery and about the hard work required to turn ideas into useful things.”

After moving to New Jersey, Jill’s neighbors gave her access to their workshop, where they were “always inventing things.” It was here that they would experiment and build their inventions. “We always wanted to find better ways to do things,” Jill says. She was not yet 10 years old.

In high school, as Jill was searching for engineering colleges, the boys’ guidance counselor suggested Clarkson. She had considered Rensselaer Polytechnic Institute (RPI), but taking classes there meant living on the campus of nearby Russell Sage College and “living by their rules,” as Jill tells it. She decided that Clarkson would be the better choice, as she could be part of the “mainstream.”

Grace (Canning) Pierce ’68 was also introduced to Clarkson by a guidance counselor and was advised she could major in mathematics and minor in engineering. “The full tuition scholarship sealed the deal for me,” Grace recalls.

### The Techettes

College enrollment was down in the early 1960s, and the United States had fallen behind the Russians in technology. It was William L. Whitson (who wanted to clear the sidewalks of snow and ice by electrifying them), Clarkson’s president from 1963 to 1966, who would persuade the Clarkson board of trustees to take a bold step and officially recruit and admit women as part of the incoming class of 1968 to help America regain its edge by graduating bright, innovative male and female engineers. The female Clarkson students were known at that time as “Techettes,” as their male counterparts were known as “Techers.”

Of the 50 female applicants to Clarkson for the fall of 1964, nine were selected. Two left after the first semester; the seven who remained were Nancy (Texido) Faust ’68 (industrial distribution), Andrea Bridge ’68, MS’70 (management), Catherine (Fry) Buttermore ’68 (mathematics), Grace (Canning) Pierce (mathematics), Mary Ann (Schernau) Stiefvater ’68 (humanities), Karen (Politica) Miller ’68 (accounting) and Jill Schoof (engineering).

Jill was able to attend Clarkson and pursue an engineering degree thanks to a generous scholarship from General Motors and a Clarkson work-study program. Karen Miller recalls, “I began as a math major but switched to accounting, which





Clarkson cheerleaders:

Front: Jill Schoof (captain) and Karen Politica

Back: Andrea Bridge, Joyce Bator and Catherine Fry

seemed a more 'marketable' degree, even though I ended up as a math teacher after a brief stint as an accountant."

The women lived in a Victorian house at 12 Lawrence Avenue. They were under the watchful eye of Florence Feistel, an older woman recruited from a St. Lawrence University sorority who advised them on their "social choices of men."

The women would cycle through a few house mothers, including "Munzie," a favorite; a dean's wife, who lasted three days; and Mrs. Johnson, who took in stride a water bucket prank the girls played on each other, initiated by Joyce Bator. Nancy Faust remembers, "The bucket would tip over when the door was opened, and it spilled through the floorboards to Mrs. Johnson's room below, right onto her bed!"

The admission of the women was considered such a newsworthy event that they were covered by *The New York Times*, and a *Time* magazine reporter lived nearby for a few weeks to chronicle their progress. Unfortunately, the story was preempted by renewed tensions in the Middle East.

*"The future belongs to engineers — be a part of it."*

— Jill Schoof '68

## Big Brother Is Watching

Rules were not applied equally to the male and female students, Jill and Karen recall. The women followed a curfew that had them home at 11 p.m. on weekdays and 1 a.m. on weekends, although this was lifted in their senior year. "We would be campused if we came in after curfew. When my future husband asked me out on a first date, I had to turn him down because I had been campused!" Karen remembers.

That first year, the women were also assigned "Big Brothers" who would protect them. Bill Beston '66, MS'72, Bob Birrell '65, Gary Bray '65 and Paul Pinard '67 were selected. "These were men of 'substantial' stature who had been chosen," Jill remembers. The women were required to study with their Big Brothers, but Jill remembers them as "nice guys."

The women had no female professors at that time, and they received mixed treatment from the male faculty.

"Professors either handled us with kid gloves or set about to prove that we weren't worthy of being there. One or two treated us 'normally,' but that was rare," Grace says.

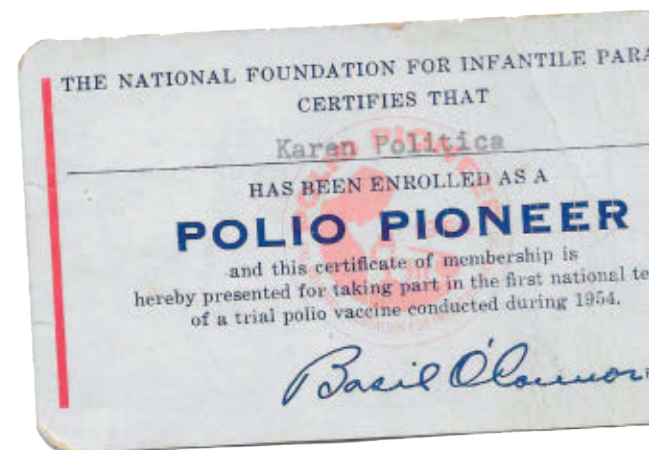
Even going to the bathroom was a struggle. Nancy remembers that they had 10 minutes during labs to go to the bathroom, but, for the women, the bathroom was down three flights of stairs, around the corner and down the hall in a U-shaped building. "We ran like hell," she says, to get back to class. "At first, I didn't know what to do. One bathroom said 'Faculty' and the other said 'Students.' I went into 'Students' and was greeted by a bank of urinals!"

While the challenges — big and small — were real, the women made the most of their Clarkson experience, in and out of the classroom.

"My social life was very active," recalls Grace. "In fact, my mother once accused me of majoring in social life. There were fraternity parties all the time. Remember that the legal drinking age at that time was 18, although I don't remember anyone abusing alcohol."



Karen Politica's Clarkson student ID card and Polio Pioneer membership card



*"Women in engineering start companies, run marketing, design, teach and manage. There are many more female role models now, which helps."*

— Jill Schoof '68

Grace helped found the bridge club, serving as president, and initiated the formation of a women's student government organization. She was also very involved with the pep band and played the clarinet at all the hockey games. Nancy served as a member of the Freshmen Orientation Board, the Society for the Advancement of Management and Sigma Tau Iota (the Industrial Distribution Honor Society). She was also secretary for the Women's Council.

Jill says her experience at Clarkson prepared her well for the workplace. She later continued her education at Northeastern University in Boston, where she earned an MSEE. She entered the workforce as a young female

engineer in the late 1960s, a time when the business world did not fully accept women — or people of color — as equals.

Jill would later run her own engineering consulting company, Design for Science and Industry, a combination of instrument and controls design and design of experiments, using statistics to turn around factories. After teaching at the University of New Hampshire and the University of Maine, she became a marine systems engineering professor at the Maine Maritime Academy in Castine.

Karen credits Clarkson for providing a foundation for working in the "real world." "When I entered accounting, I was the only woman accountant in my firm. At the office Christmas party, everyone assumed that I was a secretary."

Grace went to work for GE Information Services the day after graduation, working with engineers using computers remotely with new time-sharing capabilities. She would later transfer to the aerospace division, advancing to senior manager, with responsibility for more than 500 engineers and dozens of classified projects.

### Women in STEM Today

While the number of women in technical fields has increased in the last 50 years, the progress has been slow and uneven.

Laura Ettinger, associate professor of history at Clarkson, has spent the last several years researching and interviewing women who

graduated in the 1970s in engineering. "The numbers increased substantially during that time period as new opportunities were made available to women engineers, including affirmative action initiatives intended to encourage women to go into engineering," she says.

But while women's entry into engineering at first appeared propitious, it failed to reach its promise. Prof. Ettinger's research points to challenges related to the work-family balance and a lack of full inclusion and respect.

"Engineering is a useful case study on women's underrepresentation in STEM, as it remains today the most sex-segregated of the STEM fields in universities (20%) and workplaces (13%)," says Prof. Ettinger.

For Jill Schoof, the answer is clear: more women need to enter engineering and other STEM fields.

"Parents — especially mothers — need to learn what a good field engineering is, and girls need to know that engineering is more than just one thing," she says. "Women in engineering start companies, run marketing, design, teach and manage. There are many more female role models now, which helps."

And Jill's suggestion for young women looking for a rewarding career?

"The future belongs to engineers — be a part of it."

Jill Schoof and her husband, Rodney Flora. Jill and Rodney attended Reunion 2018 in Potsdam to celebrate Jill's 50th reunion year.





# 50 Years of Women in STEM

**Meet five women in STEM-related fields who are making their mark at Clarkson and in the world.**

Today, 50 years after the return of women to Clarkson, the University attracts female students from across the world to STEM disciplines and other programs. While men continue to outnumber women in undergraduate enrollment, women currently make up nearly a third (31.2%) of the total undergraduate population. At the graduate level, women represent 42 percent of the population.

That increase reflects Clarkson's ongoing commitment to attracting and recruiting talented young women to the University.

Female faculty-researchers now comprise more than a quarter (26%) of tenured and tenure-track faculty at Clarkson. In addition to teaching and mentoring students and performing cutting-edge research, they are taking on leadership positions at the University and in their respective fields.



**LAUREL KUXHAUS**  
Associate Professor of Mechanical  
& Aeronautical Engineering

## BETTER LIVING THROUGH ENGINEERING

Associate Professor Laurel Kuxhaus uses her knowledge of mechanical engineering and human motion to make people's lives easier.

Kuxhaus is an expert in orthopedic biomechanics. Her areas of research include developing assistive devices to improve the quality of life for people with disabilities and better understanding why and how bones break so that fractures can be prevented in the future.

Her influence in the field reaches well beyond her laboratory. Kuxhaus was recently elected a fellow of the American Society of Mechanical Engineers (ASME) and is currently serving as the ASME congressional fellow in bioengineering in Washington, D.C., working with policy experts to advise members of Congress on scientific issues.

It is a good fit for someone who points to collaboration as a key to her professional success. "For example, when experimentally studying how vertebrae fracture," Kuxhaus says, "it's important to have a clinical expert on board to ensure that what we do in the lab accurately represents what they see in the clinic."

A recent partnership with an orthopedic surgeon has led to the development of an innovative adjustable-length intramedullary nail, the metal rod used to stabilize fractured bones. It has also led to a new company, Adaptable Ortho Innovations LLC, to commercialize the technology and develop other customizable products.

But it is her students who benefit most. Kuxhaus brings her research and the latest scholarship in the field into the classroom. "I want to raise students' awareness of current engineering problems and the latest techniques for analysis. This helps them learn to critically evaluate sources and puts their own work in context."

## MAKING SENSE OF THE WORLD THROUGH MATH

As a child, Professor Katie Kavanagh wanted to be a chef when she grew up. However, her father suggested math instead. She soon realized that the creativity needed for cooking was just as useful — if not more so — in mathematics.

"Studying mathematics showed me how to solve real-world problems," says Kavanagh, whose research focuses on optimization for problems in sustainability, polymer processing and physiology. "For example, mathematical algorithms can be used to help make critical decisions about water resources and sustainable farming practices."

At Clarkson, she helps her students learn to apply math to solve open-ended problems by encouraging them to develop their own research interests or working with them on her own projects. "We have a great pool of students here, so it's easy to find smart, motivated students to contribute to a lot of these projects," she says.

Her effectiveness as a teacher has not gone unnoticed. In 2010, Kavanagh was recognized by the Mathematical Association of America with the Henry L. Alder Award for Distinguished Teaching. In 2018, she received Clarkson's Distinguished Teaching Award.



**KATIE KAVANAGH**  
Professor of Mathematics  
Associate Director of STEM Ed

# WOMEN IN STEM 2018 | WOMEN IN

**MELISSA RICHARDS '04, MS'06**  
PhD Candidate, Mechanical Engineering



## A PASSION FOR EDUCATION

Strength, patience and persistence are three characteristics Melissa Richards tries to embody on a daily basis. Richards, a PhD candidate in mechanical engineering, concentrates her research on the constitutive modeling of rock, which uses complex mathematical modeling to understand the composition of rocks and how they react to stress.

Richards credits her faith, strong family ties and personal perseverance for helping her along this particular path — one that will result in her being the first African-American woman to earn a PhD in this field from Clarkson. It's been a long journey for Richards, who has interspersed her studies with educational outreach projects aimed at helping girls get involved in STEM fields.

"My true passion," says Richards, "is actually K-12 outreach. I come from a family of educators, and it finally caught up to me!"

For several years, Richards directed Clarkson's Horizons program, a residential summer camp aimed at young women interested in STEM fields. This gave her the opportunity to mentor these students while they completed hands-on projects.

"One thing I always tell them is that when faced with discouragement or difficulty, try to re-focus your attention on why you're there in the first place," says Richards.



## LAB RESEARCH LAUNCHES AN IMMUNOLOGY CAREER

What do genetics research, immunology and pharmacology projects have in common? Marisa Ruane-Foster, a Trudeau Biomedical Scholar and biomolecular science major. Ruane-Foster, who will graduate this spring, has spent the last four years gaining unique experience in cancer and vaccine research, thanks to multiple research opportunities on campus and through the Trudeau Institute.

A passionate future scientist, Ruane-Foster chose to major in biomolecular science for the broad applicability of the degree. "It's a major that doesn't limit you," she says.

While she considered going directly into industry upon graduation, after working closely with her Clarkson professors for the past few years, she's decided to pursue a biomedical sciences PhD in immunology instead.

"As a professor, you're actively working with students and involved in shaping them into the next generation of scientists," says Ruane-Foster, who acknowledges the power of paying it forward. "I would also like to be able to help propel more minorities into the STEM fields overall."

WOMEN IN STEM



**MARISA RUANE-FOSTER '19**  
Trudeau Biomedical Scholar

# STEM 2018 | WOMEN IN STEM 2018



**RUTH BALTUS**  
Professor of Chemical &  
Biomolecular Engineering

## ENGINEERING LEADER AND MENTOR

After earning a bachelor's degree in chemistry, Ruth Baltus thought engineering might be a better fit. She entered a graduate program in chemical engineering at Carnegie Mellon University, earning her PhD in 1982.

Baltus then came to Clarkson, where she soon realized how rare it was to be a woman in engineering. "During my first semester at Clarkson, I taught a course in thermodynamics taken by civil and mechanical engineers," she recalls. "I walked into a room with 100 students and saw a sea of male faces. That was my light bulb moment; I realized that women weren't really in engineering."

Luckily, that has changed quite a bit since then, and Baltus has been instrumental in that change, especially at Clarkson. For more than 35 years, Baltus has influenced and mentored several generations of engineering students, particularly young women.

Because of her contributions to the chemical engineering field as a researcher, educator and mentor, Baltus will be honored with the American Chemical Society Award for Encouraging Women into Careers in the Chemical Sciences. She will be recognized for this career achievement this April at the American Chemical Society's National Meeting.





*Prof. Jason Schmitt*





# Making the Case for Open Access

By Doug Buchanan

## Jason Schmitt has struck a nerve.

With the release of his documentary *Paywall: The Business of Scholarship*, Schmitt has put academic publishing houses on notice that the days of reaping billions of dollars by maintaining a monopolistic stranglehold on academic research may well be over.

Schmitt, the chair of Clarkson's Department of Communication & Media, is a rare combination of journalist and professor; his work for media outlets such as *Forbes* magazine and *HuffPost* has honed his ability to root out wrongdoing. And in his film, which has had screenings at the United Nations, as well as at hundreds of colleges and universities around the world, publishers such as Elsevier, Wiley and others have been called

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"Talk about the best business model in the world. You get the research for free. You get the editing for free. You charge an enormous amount of money back to the people that do the research."

— Prof. Jason Schmitt

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to task for charging exorbitant prices for digital subscriptions to journals that institutions of higher learning are, for all intents and purposes, forced to purchase.

"Talk about the best business model in the world," Schmitt says of these companies. "You get the research for free. You get the editing for free. You charge an enormous amount of money back to the people that do the research."

Annual subscriptions for some of these journals run in the thousands of dollars, making them

largely inaccessible to many in the academic and scientific communities they purport to serve. And they are costing institutions of higher education millions every year.

Schmitt's outrage at such an exclusionary system led him to successfully seek a grant from the Open Society Foundations to produce the film. Using his department's equipment, he and five Clarkson students embarked on the project.

Two years and 45,000 miles later, the film was released on September 5 — coincidentally, a day after the announcement of Plan S, which requires open access by 2020 for all publicly funded scholarship in Europe.

"And within 10 days," Schmitt notes, "Elsevier's stock ... had a 13 percent decline."

The tide is turning here too. California recently announced that anything published in the state has to be deposited into an open-access repository within a year.

Part of Schmitt's mission is to bring to light the many victims of these archaic publishing practices: every student struggling with a tuition hike and every scientist or medical doctor unable to access research that could have pushed the frontiers of medicine and global solutions forward.

And he's leading by example: the film can be viewed for free at [paywallthemovie.com](http://paywallthemovie.com).

Schmitt — along with practically the entire global academic community — hopes things will change soon.

"Hopefully, my documentary will be outdated within two or three years, and everybody will say, 'Look at that old system that was perpetuated for so many years — glad we have that behind us.'"





CLARKSON  
SCHOOL

FIRST STRONGHOLD  
FUNDRAISING PROGRAM  
MARCH 11, 2014

40  
YEARS



# 40 Years of Bridging the Gap From High School to College:



## The Clarkson School

By Michael P. Griffin MS'00

In August 1978, the first Clarkson School students arrived on the downtown campus and moved into Craig and Anton houses, next to what was then the only Snell Hall. About 20 of the early college students lived in the downtown campus housing, taking their meals at the student union, Lewis House.

Fast forward 40 years to August 2018, as the 65 Clarkson School students of the Class of 2019 arrived to live in Newell and Ormsby houses, which are adjacent to The Clarkson School's Price Hall offices on the hill campus.

The Clarkson School — or TCS — is Clarkson's one-year early college program for high academic achievers who are running out of classes to take in high school or home school and are seeking a way to be challenged and engaged while completing their first year of college. After their TCS year, students elect to continue at Clarkson or transfer to another college as a sophomore.

"Only a handful of programs have the residential learning community and early college combination that we do," says Jon Goss, director and head of TCS. "We're like a boarding school in a college, but our students are all full-time first-year students."

The Clarkson School was started by former Clarkson President Robert A. Plane, whose wife, Mary, conceived of the program after noticing the experience of their own daughter as a high school senior.

Over the next four decades, many alumni would credit their accomplishments in life to their year at TCS.

"The Clarkson School certainly played a role in the success I have today," says Ron Angona TCS'96, chief cardiovascular perfusionist at Strong Memorial Hospital in Rochester, New York. "At the time, I wasn't challenged by my high school curriculum and hadn't yet formed good habits with respect to studying, prioritizing, etc.

The Clarkson School provided the foundation upon which I based my subsequent college and professional work habits."

President Plane served as TCS's first headmaster, a title that he relinquished in 1981 to TCS Director of Student Life and Counseling Gary Kelly, who served for the next 22 years. He was followed by Shailindar Singh, David Craig, and, now, Jon Goss, who has served as the director and head of TCS since 2010.

While some things remain the same after four decades, some are different.

"We still have family dinners, but not every week," says Brenda Kozsan '87, MBA'90 associate head of TCS. "And today our students participate in personal and professional development workshops, field trips and a first-year seminar class. We also offer an international option during spring break."

"Another change is our relatively new partnership with the Honors Program," says Goss, who is also the Honors director. "We have 'Dualies' now — 'Schoolies' dually enrolled in the Honors Program."

These students arrive at Clarkson earlier in the summer to start their research.

"This summer, I worked in Professor Silvana Andreescu's bioanalytical chemistry lab with Abraham Finny, a graduate student," says Cindy Jiang TCS'19. "It was really cool to work in an actual lab and conduct real experiments for five weeks. It was a lot of responsibility and work, but also a lot of fun. I'm glad I had the opportunity to do it."

Many TCS students come from the Northeast, but there are always some students from around the country and world.

"My family emigrated from the former USSR," says Oleg Dulin TCS'97, '00, who is now chief architect at ADP. "I am not exaggerating that TCS was a springboard for all of my future life in

America. If someone were to ask me to describe the best example of America being the 'land of opportunity,' I would not hesitate to say that TCS is one such example. There were a few kids in my group who came from low-income families, rural communities — some were the first in their families to ever go to college. The Clarkson School was an incredible opportunity for all of us."

Admission to TCS is more competitive today, and the students are more diverse in gender, ethnicity and majors than is the general University student body as a whole. The female/male ratio is 60/40, and TCS students have a higher average GPA than does the rest of the University student body, with a cumulative GPA of 3.434 for the Class of 2018. "The average TCS student is on the dean's list, which is pretty amazing," says Goss.

More TCS students than ever before are staying at Clarkson after that first year. Today, 60 to 70 percent stay on at the University, up from the 50 percent in past years. The remaining students typically go on to other competitive institutions.

Developing alumni engagement and mentorship and service programs for students are at the top of the list for TCS as it looks to the future. But right now, the Class of 2019 has high hopes for their Clarkson School year.

"My one hope in attending TCS is that I maintain the motivation and excitement about my education that I found so difficult to hold on to in high school," says Morgan McGrath TCS'19 of Pittsford, New York. "I think that by putting myself in a college environment, surrounded by academically motivated students, my curiosity and passion for learning will only grow."

"Academically driven students are great people to have by your side in college, and TCS is designed to allow young students to use their own passions to motivate each other," she adds.

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*The Clarkson School would love to reconnect with alumni. Reach out to Kathleen O'Leary, associate director for student life and alumni relations, at [koleary@clarkson.edu](mailto:koleary@clarkson.edu) or 315-268-4331.*

## GRADUATE/PROFESSIONAL EDUCATION



\*AS OF JUNE 2018

### New Degree Program

#### MS in Interdisciplinary Bioscience & Biotechnology (IBB-MS)

The new IBB-MS degree program is the master's equivalent of the University's IBB-PhD program. The MS program is intended for individuals who wish to be competitive for biomedical and biotech industry, scientific and administrative positions; strong PhD bioscience programs; or veterinary or medical school professional programs.

### Chemistry PhD Students Recognized for Research



#### ACS Award

**Ali Othman** received a 2018 American Chemical Society (ACS) Graduate Award in Environmental Chemistry. Othman is a member of the BIO Sensors and Electrochemistry Research Group led by Professor Silvana Andreescu, Egon Matijević Chair in Chemistry. His research focuses on the development of recyclable sorbents for the treatment and management of water eutrophication, which has become an important worldwide environmental problem.

### Electrochemistry Research Presented at Scientific Meeting

**Eduard Dumitrescu** presented his research "Electrochemical Assessment of Nitric Oxide Spatial Distribution at Single Organ Level in Live Zebrafish Embryos" at the national Electrochemical Society (ECS) Meeting.

Dumitrescu works with Professor Silvana Andreescu, designing custom-made electrochemical probes with dimensions in the order of several micrometers for the detection of biological markers. He is collaborating with Associate Professor Kenneth Wallace in the biology department to apply this technology to study physiological processes in zebrafish embryos. The information acquired using these sensors may contribute to the understanding of oxidative stress mechanisms related to disease conditions.



#### Invited Talk

**Emmalyn Dupree '16** received a travel award and an invitation to present her research in Romania at Alexandru Ioan Cuza University's 2nd International Summer School "PROTEOMICS – from Introduction to Clinical Applications."

Dupree is currently performing proteomic studies on human serum samples to identify the effect of legacy chemicals on the Great Lakes ecosystem, specifically contaminants like polychlorinated biphenyls and organochlorine pesticides. Her work also includes developing a unique protein database for the lake trout species that can be used in future Great Lakes studies.

Dupree works in Associate Professor of Chemistry & Biomolecular Science Costel Darie's Biochemistry and Proteomics Lab.



## Leadership Appointments in STEM and Higher Education

### 2017-18 Highlights

Clarkson graduates have long distinguished themselves in industry through leadership positions as CEOs and senior executives and through the design and development of technology that makes the world a better place.

Today, our graduate alumni are making their mark in higher education, leading technology education and research to develop STEM professionals for the 21st century.



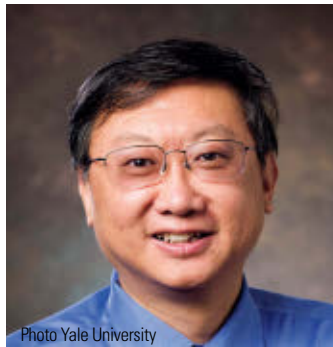
**Ganapathy Naganathan '81 (MS,ME) | President, Oregon Institute of Technology**

On May 18, 2018, the board of trustees of the Oregon Institute of Technology installed Ganapathy Naganathan as the university's seventh president.

"Oregon Tech," as it is known, is the only public polytechnic university in the northwestern United States, with multiple campus locations.

Naganathan is an ASME fellow. Prior to joining Oregon Tech, he served as the dean of the College of Engineering at The University of Toledo (UT) in Toledo, Ohio, for over 15 years. He was also UT's interim president during 2014-15 and was the founding chair of the mechanical, industrial and manufacturing engineering department.

He holds a PhD in mechanical engineering from Oklahoma State University.



**Dianqing Wu '91 (PhD,Cm) | Gladys Phillips Crofoot Professor of Pharmacology, Yale University**

Dianqing (Dan) Wu is the newly named Gladys Phillips Crofoot Professor of Pharmacology at Yale University. He conducts research aimed at understanding the molecular basis and function of signal transduction pathways, with an emphasis on those initiated by seven-transmembrane receptors.

Earlier this year, Wu's team reported the development of an antibody that blocks tumors in animal models of colorectal cancer. If the finding is confirmed in clinical trials, the antibody-based treatment could become an effective weapon against colorectal cancer and possibly other cancers.



**Gabriela Gonzalez '00 (MS,EMM) | Chair, STEM Education Advisory Panel, National Science Foundation (NSF)**

Gabriela Gonzalez, deputy director of the Intel Foundation, Intel Corporation, has been appointed chair of a new 18-member STEM Education Advisory Panel.

Developed by the NSF in consultation with the Department of Education, NASA and the National Oceanic and Atmospheric Administration (NOAA), the panel will encourage scientific and technological innovations in American education.

Congress authorized the creation of the advisory panel to advise the Committee on Science, Technology, Engineering and Math Education (CoSTEM) on matters related to STEM education.

## UNDERGRADUATE STUDENT DISTINCTION



The winning team with advisor Associate Prof. of Mechanical & Aeronautical Engineering Kenneth Visser. Photo Credit: John Blacksten/AIAA

### Clarkson Wins AIAA International Competition

Clarkson's Design-Build-Fly team entered one of the lightest planes, weighing just 8 ounces, in the American Institute of Aeronautics and Astronautics (AIAA) Design-Build-Fly student competition held in Wichita, Kansas, last spring.

The innovative design earned them a first-place finish as they swept the field of 77 teams from 16 countries for their first-ever win in the international competition.

The Clarkson team's radio-controlled plane was made primarily of foam and had a wingspan that was just 9 inches. Under the AIAA scoring system, this short wingspan and the plane's light weight provided an advantage.

The team's design paper was graded prior to the competition and was ranked second, which also contributed in the winning scoring formula.

### Honors Students Win Goldwater Scholarships

**Sarah Duclos '19** (mechanical engineering), **Andres Garcia Jimenez '19** (aeronautical engineering and physics) and **David Russell '20** (electrical engineering and computer science) were all named Goldwater Scholars for 2018-19.

Sarah Duclos has conducted research in Assistant Professor of Mechanical & Aeronautical Engineering Arthur Michalek's connective tissue lab since the summer of 2016. Her work has focused on measuring residual strain in intervertebral discs and is published in the *Journal of the Mechanical Behavior of Biomedical Materials*.

Since his first year, Andres Garcia Jimenez has been conducting research under Assistant Professor of Mechanical & Aeronautical Engineering Ioannis Mastorakos on an NSF-funded project to strengthen metallic nanofoams through ligaments scale molecular dynamics. The project is a collaboration between Clarkson and Purdue University.

David Russell began his research with Assistant Professors of Computer Science Sean and Natasha Banerjee the summer before his first year and has continued in their lab, exploring 3-D motion capture as well as combining the information from thermal and depth cameras to generate predictive models of everyday phenomena.

### 2018 Levinus Clarkson Award

#### Grayden Shand '18

BS in Innovation and Entrepreneurship  
Minors in Philosophy and Project Management

Grayden Shand received his initial exposure to entrepreneurship through a startup business, FourScore Apparel. He completed three marketing internships with Fuse Marketing, the Vermont Fresh Network and Veritas Prime.

With Associate Professor of Economics & Financial Studies Bebonchu Atems, Shand researched the empirical relationship between entrepreneurship and income inequality in his junior and senior years. This research ultimately culminated in publication in the *Journal of Small Business Economics* in January.

Shand is currently pursuing a Master of Science in Data Analytics at Clarkson.

### 2018 Frederica Award

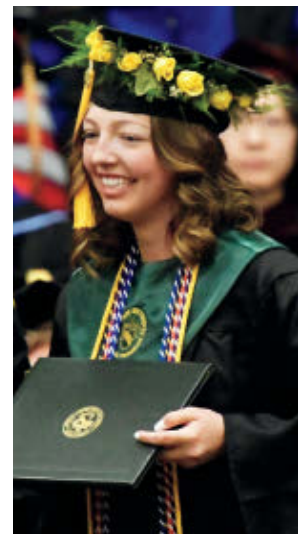
#### Krissy J. Govertsen '18

Honors Program, BS in Civil Engineering  
Concentrations in Structural Engineering, Architectural Engineering and Construction Engineering Management

Krissy Govertsen held numerous leadership positions on campus, including serving as class president and as an officer for the American Society of Civil Engineers (ASCE) student chapter.

Govertsen completed two internships and performed market research for her Honors thesis, as well as for her business, SMART Start House LLC. She earned the Esprit de Corps award in the clean technology track at the New York State Business Plan Competition.

Govertsen is pursuing a master of science degree in sustainable building systems and an interdisciplinary PhD at Northeastern University in Boston.





## Professor Elected Fellow of ASCE

Hayley Shen, a research professor in the Department of Civil & Environmental Engineering, was elected fellow of the American Society of Civil Engineers (ASCE), having served on various ASCE committees and boards throughout her career. Shen's research is focused on granular materials and sea ice-wave interaction, two fields in which she has contributed significantly by creating theories and models, such as the constitutive law in a rapid flow regime and the ice model used in WAVEWATCH III®, a global ocean wave model used for Arctic forecasting.



Prof. Andrew David

## NSF Grant Supports Solar Cell Research

Assistant Professor of Chemical & Biomolecular Engineering Eunsu Paek and Brian Helenbrook, the Paynter-Krigman Endowed Professor in Engineering Science Simulation, have received a \$513,000 NSF grant for their research project, "Horizontal Ribbon Growth of Single-Crystal Silicon." Single-crystal silicon wafers are used in high-efficiency solar cells and are manufactured through horizontal ribbon growth, a method that can potentially reduce the wafers' cost.



Prof. Eunsu Paek

## Biology Professor in Survey of Invasive Marine Species

Last July, Assistant Professor of Biology Andrew David participated in a rapid assessment survey by the Massachusetts Office of Coastal Zone Management, joining a team of marine biologists as they identified and documented invasive and introduced marine species along the coast, from Maine to New Hampshire.

Introduced and invasive species are not only a threat to the health of marine ecosystems, but also create an estimated annual economic cost in damages in the U.S. that exceeds \$120 billion. The rapid assessment survey is crucial for monitoring newly introduced species and changes in the distribution of invasive and introduced species. The results inform management and eradication policies.

David has researched extensively the range and dispersal of invasive aquatic species, most recently focusing on developing a method to predict the spread of invasive species by combining genetic studies with high-resolution particle tracking models. The polychaete expert of this year's survey team, he concentrated on species encrusting ship hulls and dock pilings and brought samples back to his lab for undergraduate research projects.



Prof. John Milne

## Milne Named Institute Fellow

John Milne, the Neil '64 & Karen Bonke Associate Professor of Engineering & Management in the David D. Reh School of Business, has been elected a fellow of the Institute for Operations Research and the Management Sciences (INFORMS). INFORMS is the leading society for professionals in operations research and analytics worldwide and has over 12,500 members.



Kathryn Johnson

## The College-to-Career Experience Reboot

Visionary career professional and student affairs leader Kathryn Johnson told students to stop looking for a job and start building a career. This summer, Johnson retired after four decades of transformative leadership.

Clarkson's Career Center has a national reputation for its innovative approaches to career advisement, preparation and placement.

Earlier this year, The Princeton Review ranked Clarkson among the top 15 colleges in the nation for career services.

And it's true. Clarkson boasts a high placement rate and strong starting salaries. Much of that success can be attributed to the caliber of Clarkson students and the University's overall quality. But it is also a direct result of the Career Center's close industry ties, progressive student-employer programs and career preparation that starts the very first year students are at Clarkson.

Kathryn Johnson, the chief architect of the Career Center and a national leader in career services and international education, retired in June after nearly 45 years of service to Clarkson.

Johnson was part of a generation of career professionals in the 1970s and '80s who ushered in a new era of hands-on career services that moved well beyond the traditional one-stop shop for graduating seniors. A staunch advocate of experiential education, Johnson launched the University's co-op, internship and study abroad programs. She later served as a vice president, overseeing areas that included student affairs and international relations.

"Kathryn has served in national professional association leadership roles, formed strong ties with hundreds of alumni, forged relationships with employers across the U.S. and developed study abroad partnerships with top-ranked universities across the globe," says President Tony Collins. "But the direct beneficiaries of her hard work, dedication and vision have been generations of Clarkson students whose education and personal development were enormously enriched through the programs and opportunities developed by Kathryn and her talented team over these many years."

On August 15, 1973, Clarkson was preparing to welcome its newest class of students to campus.

That day, Johnson, a recent SUNY Potsdam graduate, began working at the University in The Annual Fund (now The Clarkson Fund). "I worked for Dave Elkins '69 and with other great people doing phone-a-thons, working with the students and managing records. We were downtown in Old Snell, right across from the President's Office. I was in the middle of everything that was going on, and I loved what I did. But I was adamant: I was only staying for two years, and then I was moving from the area.



“When I look back, I can see that I was being primed for something else,” she says. “While working in The Clarkson Fund office, I got to know the senior administrators and the president [Robert Plane].” When the two years were up, instead of leaving, she was offered the opportunity to take on the leadership of the Placement Office (now the Career Center).

And for the next 25 years, Johnson did just that.

In the mid-to-late ’70s, the career services field was suddenly booming. “Employers began looking at students not just for their degree, but for what they brought beyond that,” says Johnson. “This was a fundamental shift in thinking and in hiring.”

In addition to being one of Clarkson’s first female administrators, Johnson was one of the only female directors in the career services field in those early days.

Johnson brought in career counselors who worked one-on-one with students. “It was about getting to know them and developing them as individuals, and this meant getting to them early in order to broaden their experiences. Students had to understand that they couldn’t just tunnel vision their way through Clarkson. They had to get out of their comfort zone and develop critical skills like communication, leadership, teamwork and global awareness.”

Over the years, those experiences grew to include co-ops, internships and study abroad. Today Clarkson has study abroad agreements with universities in

28 countries. This past summer, the first group of Clarkson students participated in global internships.

“International education became a real passion of mine,” she says. “It’s so important for students today as they prepare to enter an increasingly global workplace.”

In 2004, Johnson took over as VP for student affairs, but continued to oversee the relationships with Clarkson’s global university partners. With her team of student affairs professionals, the Student Success Center was formed; the health and counseling teams were merged into one center, providing a more holistic approach; stronger ties to the academic areas were developed; and the parent relations program better engaged families.

For the last two years, Johnson served as a VP and founding director of the International Center, a hub for all study or work abroad opportunities, as well as a welcome center for international students attending Clarkson. “Bringing students from overseas is important to making our campus in Potsdam more diverse and dynamic.

“I loved working with our students and with colleagues across the campus. And I made friends in my industry and across the globe,” says Johnson. “And much of the credit to my career success goes to the talented staff I have had the pleasure to work and collaborate with over the years.

“I can honestly look back and say that I always loved what I did. How many people can say that after 45 years?”

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## Overseas Internships 2018

Five Clarkson students participated in global internships this past summer:

**Alexandria Barber ’19** spent 10 weeks as a business development intern at the Dublin, Ireland-based startup Think Biosolution, which develops wearable medical devices powered by artificial intelligence.

**Jennifer Guo ’18** worked as a chemical engineering intern for LABAQUA, an engineering firm in Madrid, Spain.

**Miao Luo ’17** had a 12-week technical internship at NDN Group (HK) Ltd., a digital conglomerate and investment group in Hong Kong.

**Graham McCarthy ’20** was a data analyst intern at Audiense, a firm that provides data-driven customer insights for marketing and advertising in London.

**Shawn Schneider ’20** spent eight weeks in Hong Kong as a mechanical engineering intern at Ampd Energy Ltd., an award-winning energy storage company.

*I’m from a small town just outside a small city, so going from 300,000 people in a rust belt American city to eight million people in a wealthy, rapidly developing place was a major change of scenery. I traded my pickup truck for trains and taxis, peace and quiet for hustle and bustle, rolling hills and forests for steep mountains among skyscrapers, English for Cantonese. But I quickly found a passion for the city and its beauty.*

— Shawn Schneider ’20



# Veritas Prime: A Golden Knights Success Story

A chance meeting  
between undergraduates  
nearly two decades  
ago led to a wildly  
successful, fast-  
growing company.

By Doug Buchanan



(l-r) Mike Pappis '03, Jessie (Conklin) Pappis '04, Raj Sharmacharya and Nick Begin '03

Relationships forged in college build ties that can last a lifetime.

Occasionally, relationships also grow in another direction as groups of friends become networks that coalesce into personally rewarding and financially lucrative business ventures. And every now and then, the perfect synchronicity of people and ideas come together to strike gold.

## Welcome to Veritas Prime.

Founded in 2013, Veritas Prime ([veritasprime.com](http://veritasprime.com)) specializes in human capital management (HCM) technology, helping companies manage personnel. The company has doubled in size every year and now has 50 employees and offices in three U.S. cities, as well

as offices in London, England, and Lima, Peru. But Veritas Prime never would have existed if it hadn't been for Nick Begin '03, Mike Pappis '03 and Jessie (Conklin) Pappis '04 — three of the company's four founders.

Jessie met Nick her first year, but it wasn't until her junior year that she met her future husband, Mike Pappis. While the genesis

of these core relationships dates back to 2003, the three would each trace their own path in the workforce before coming together in 2011 to lay the groundwork for what would become Veritas Prime.

Nick and Mike have degrees in management information systems, while Jessie was a business and technology management major with a minor in entrepreneurship. After graduation, Nick went to work for FEMA, setting up disaster command centers, and Mike joined an information management leadership program for General Electric

in Kansas City. Jessie soon joined Mike in Kansas City, working as a SAP HCM consultant for IBM.

After a few years and other career stints, the time was finally right for the three Golden Knights, along with colleague Raj Sharmacharya, to begin to develop their idea for a new company.

"We felt like maybe there was a better way to do things when it came to dealing with customers and consulting," Jessie says.

The growth of the company — which specializes in helping its customers use SAP SuccessFactors, a cloud-based software used to manage personnel — has been very rapid. The founders attribute that success and growth to starting with the best possible foundation.

"Veritas is the Latin word for 'truth,' and prime means 'excellence,'" explains Jessie. "And that's the core of who we are as an organization. We knew when we started our company that we wanted everything that we ever did with our partner, SAP, with our employees and with our customers to always come back to those two core principles."

The company works with a range of clients. "We work with small-, medium- and large-sized companies," says Jessie. "Our smallest customer has 40 employees, and our largest has 200,000 employees globally."

Veritas Prime runs a paid internship program that is exclusive to Clarkson students and includes remote and onsite opportunities. The company has harvested about half of its employees from Clarkson through this unique program.

"We've had so much success with the interns and employees from Clarkson, it's really hard to look anywhere else," says Nick. "I always tell people that if you're willing to pay to live in a place where the temperature reaches negative 20 degrees, then that says something about your drive and work ethic!"

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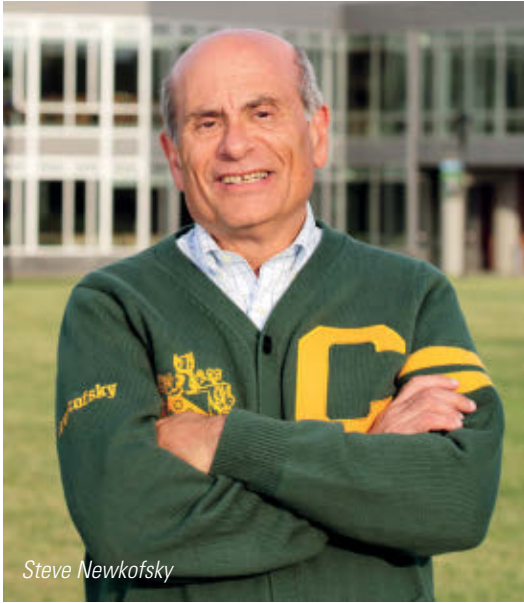
Veritas Prime was recently  
named on *Inc.* magazine's 2018  
national list of the 5,000 fastest-  
growing private companies.

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# Newker Nation Steps Up For Students

By Doug Buchanan



Steve Newkofsky

When Dr. Siren R. Chudgar '96 heard that Stephen Newkofsky H'03 was retiring as Clarkson's dean of students and lifetime engagement, he knew he wanted to do something — something that would honor Newkofsky and benefit students, too. So he decided to create an endowment fund in Newkofsky's name. Two years later, it's clear he has succeeded — thanks to his determined effort and a host of like-minded, committed Clarkson alumni.

Chudgar recognized the profound impact Newkofsky has had on thousands of students in his roles with the University, starting in 1980 as the associate dean of students, then moving to a leadership position in alumni relations, where he launched programs to connect students with alumni. His final role was the dean of students and lifetime engagement.

"There are many people who graduated in the '80s, '90s, '00s, and even the '10s who were impacted by Steve," Chudgar says.

Chudgar knew that he needed \$25,000 in seed money to start an endowment. That money was quickly raised through donations and company matching by Chudgar, Peter Radosta '88, Richard

B. Boziwick '73, Eric Dibble '81 and Jill L. Thiemann '90. Many other alumni continue to contribute to the fund.

The endowment supports two funds: the Stephen Newkofsky H'03 Endowed Student Engagement Scholarship and the Stephen Newkofsky H'03 Endowed Student Affairs Innovation Grant.

The scholarship is awarded annually to a first-year student and continues through all four years. Currently, one scholarship recipient is receiving \$1,000 each year. A second scholarship will be awarded in April 2019.

The innovation grant was created to support campus groups and organizations. The first grant was awarded in 2017 to the First-Year Cup program, which offers first-year students opportunities throughout the school year to be engaged and get to know one another.

"While the scholarship impacts one student, the grant is meant to enrich the lives of all students on campus," says Chudgar.

The endowment is now at more than \$100,000, and Chudgar hopes that number will keep getting bigger as more alumni participate. The more money that is in the fund, the more grants and scholarships that can be awarded, all in the name of Steve "Newker" Newkofsky — a name synonymous with Clarkson for thousands of Golden Knights.

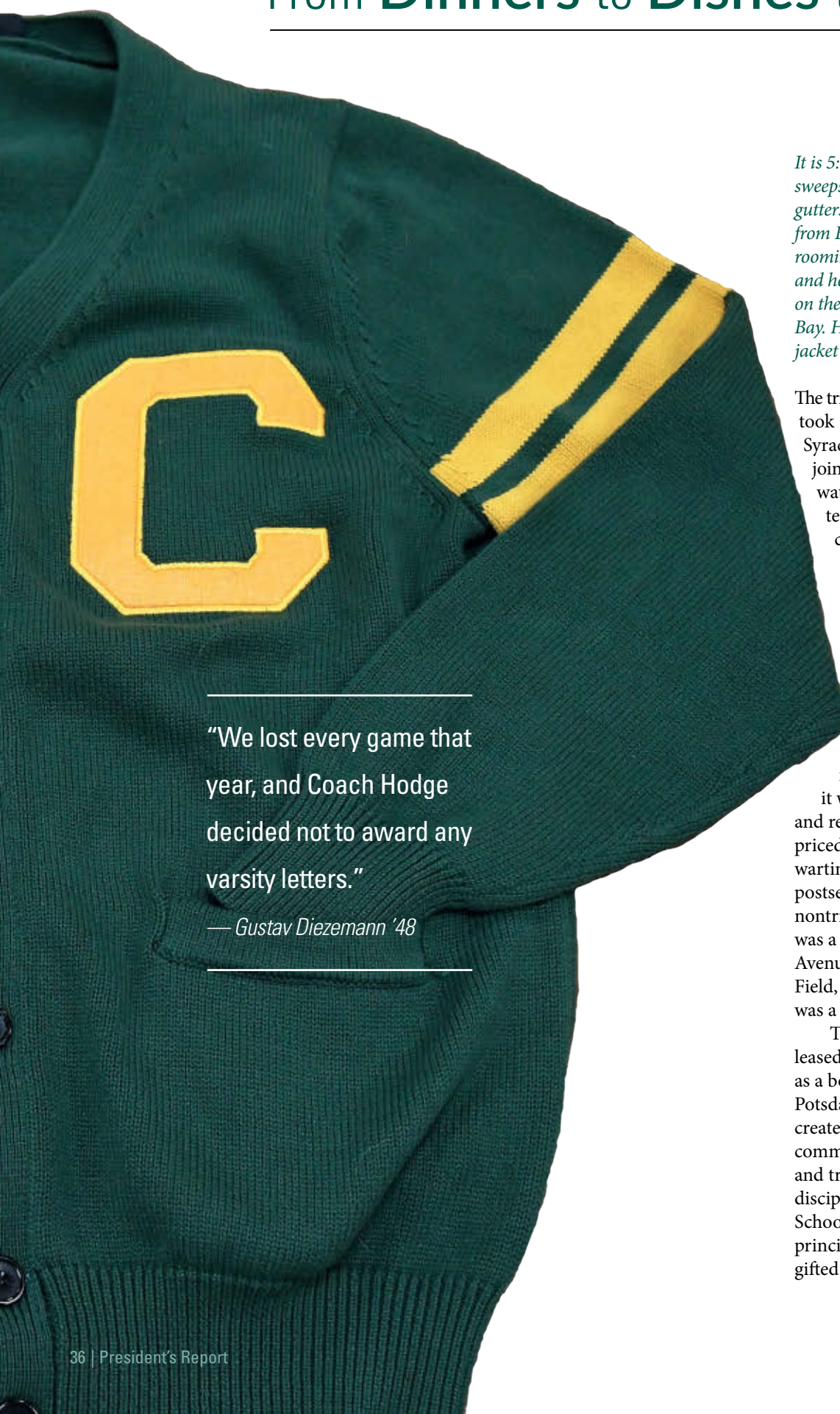
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"Students and alumni have always meant so much to me. I am humbled by the generosity toward the scholarship and innovation grants in my name and by the alumni who made it all happen. This truly is the greatest professional honor I could ever ask for."

— Steve Newkofsky H'03

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# From Dinners to Dishes to Dams



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"We lost every game that year, and Coach Hodge decided not to award any varsity letters."

—Gustav Diezemann '48

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*It is 5:30 p.m. on a cool fall evening. Wind sweeps bunches of leaves into bushes and gutters. Dusk approaches as a lanky teenager from Brooklyn, New York, descends the rooming house front steps, crosses the street and heads toward the rear of the big house on the southeast corner of Pierrepont and Bay. He holds the collar of an old baseball jacket tight to keep out the chill.*

The trip from Grand Central to Potsdam took 12 hours, including stops in Albany, Syracuse and Watertown. Passengers joined or left the train, and coal and fresh water were added to the locomotive's tender. In July 1945, a one-way ticket cost \$15, food not included.

Gustav Diezemann '48, a graduate of Brooklyn Technical High School, or "HS 430" to New Yorkers, knew little about the Thomas S. Clarkson Memorial College of Technology before 1945. Occasionally, he would hear it mentioned on the radio when weekend college football or baseball scores were recited, but when a teacher told him it was a very good engineering school and reasonably priced, the "reasonably priced" got his attention. The 1941 wartime economy made planning for postsecondary education expenses a nontrivial exercise. Of less import, HS 430 was a short distance from 1720 Bedford Avenue, known in those days as Ebbets Field, home of the Brooklyn Dodgers; Gus was a Giants fan.

The house on Pierrepont and Bay was leased by an Ogdensburg family and used as a boarding house for women attending Potsdam Normal School, which was created in 1869 pursuant to a legislative commission formed to "establish normal and training schools for the education and discipline of teachers." Potsdam Normal School would become SUNY Potsdam; its principal building, Snell Hall, would be gifted to Clarkson in 1958.



By Jim Wood '64

*Gus enters the kitchen by the rear door and hears the large dining area full of coeds — something noticed by a first-year student attending an all-male college. He puts on an apron and sits at the kitchen table to eat dinner.*

On the train from Brooklyn, Gus chatted up a passenger and learned there might be accommodations at 36 Bay Street, where single rooms rented for \$3 per week; there were three single rooms and one double for rent, a common practice in those days. His first night was likely spent in the now-gone American Hotel. On a warm summer morning, he schlepped his bags to Bay Street only to find all the singles were rented, and only one bed in the double room was available. He grabbed it for \$2.50 per week, food not included. If you had a radio, add 25 cents per month for electricity. He moved into a single after the first trimester and occupied it until graduation. Laundry services were not included; dirty clothes were mailed back to Brooklyn weekly to be cleaned, ironed and returned by mail.

Gus was accepted into Clarkson's trimester program as a civil engineering major (\$8 per credit hour) and chose to attend without first visiting campus. This meant he could complete coursework by December 1947 (\$18 per credit hour), take his finals in January 1948 and graduate in February. Many classes were held in Old Main, an "easy walk through the field just behind us. I never missed an 8 a.m. class or a Saturday lab," Gus says with a wry smile, as if thinking about legions of underclassmen who would later trudge downtown from the Hill dorms and cross over a very frozen Raquette at 7:30 a.m. in a nippy -30° F.

An all-male college with about 125 students, including a dozen WWII vets, struggled with social activities. Four Greek social fraternities were on

campus in 1945, and Gus pledged Karma, the youngest, founded November 11, 1929. The name comes from Sanskrit, meaning "to do or to act." But, it was baseball that really interested him.

Henry Hodge was in the midst of a 38-year professional career at Clarkson. He would coach 516 baseball games to a 296-220 win-loss record and 27 winning seasons. In 1971, Coach Hodge was inducted into the American Baseball Coaches Association. In 1945, Gus made the team as a utility infielder, but it would not be one of those winning seasons. "We lost every game that year," Gus recalls, "and Coach Hodge decided not to award any varsity letters."

Eleven of the 66 students entering the 1945 trimester program graduated in February 1948. Gus spent several months looking for a job. The economy grew quickly after the war; the U.S. retooled factories, and the country entered a period of low inflation and balanced federal budgets. In the spring of 1948, Gus met Clarkson alumnus Howard McCarter '28, who worked for a small engineering company in New York City and who hired Gus because they were both Clarkson alumni. McCarter left the company in 1950 to join Ambursen Engineering and took Gus with him. In

1903, Nils Ambursen, a Norwegian-American civil engineer and founder of the original parent company, developed and patented an innovative concrete slab and buttress



Gustav Diezemann '48 and wife Ruth

dam that was a significant engineering advancement and cost reduction compared with the typical gravity dam. Ambursen put Gus' Clarkson education to good use as a designer and resident field engineer in Maryland.

Now into retirement, Gus and his wife, Ruth, live on the South Shore of Massachusetts, enjoying its seasons, arts and music, as well as visits from relatives, including his cousin Gerry Schult '65. If you visit, you will hear stories of attending Clarkson reunions and local summer send-off picnics for new Clarkson students. Their life is full. Although prior commitments intruded on his 70th reunion, at the July 14, 2018, alumni dinner, President Tony Collins awarded (in absentia) a Varsity C sweater to Gus Diezemann, class of 1948. Gus is "delighted" with the sweater.

*His dinner finished, Gus walks into the dining area, now quiet and empty of coeds, and buses and cleans the tables; hot water and soap fill the sink. It is a fair trade: dishes, pots and pans washed, dried and put away and the dining area cleaned and set for the morning meal, all in exchange for a home-cooked dinner. Finished before 9 p.m., he walks back to his room to complete his homework assignments.*



## Making Things Happen

Kurt Knolle '14 is part of the team at Lumapod (lumapod.com), an Austrian-based startup that has developed what it says is the world's fastest tripod.

The East Aurora, New York, native now lives in Linz, Austria, and is pursuing a Master of Science in Engineering at the University of Applied Sciences Upper Austria, where he connected with Lumapod's founder. "After I spoke with him, he was interested in my product management, design and engineering experience, so he asked me if I'd be interested in joining the team for a Kickstarter campaign," says Knolle. "I decided it would be a great experience and framed my master's thesis around the topic."

Knolle's duties at Lumapod are interdisciplinary. "My main task was to manage the crowdfunding campaign," he says. "It was really cool to utilize all the knowledge I have acquired thus far in my studies, career and personal life. One minute I'm planning our social media strategy for the next 15 days, along with analyzing our Facebook ads, and the next I'm designing, modeling and 3-D printing a prototype for an add-on component."

This fall, Lumapod's very successful \$40,000 Kickstarter campaign ultimately raised more than \$400,000 to manufacture two tripods that can be set up in four seconds and are compact enough to fit into a small day pack.

Knolle says that Clarkson gave him the engineering foundation to start his career and allowed him to challenge



Kurt Knolle '14

himself very quickly in the world of design. "I knew Clarkson was a top school, and the education I received prepared me well. That gave me an underlying confidence that I am very thankful for and I know helped me push myself."

Knolle's advice to Clarkson students? "Try as many new things as you can, and focus on the things that excite you. Don't fall into the trap of just playing video games and watching movies. There is a lot of opportunity out there for people who make stuff happen!"



Sitting: Vincent Baldwin '11, Emily (Boziwick) Baldwin '11, George Boziwick '48, Richard Boziwick '73 and James Laing MS'10, PhD'14. Standing: Caitlin Boziwick '08, Rachel Boziwick '10, DPT'13

## Three Generations at Clarkson

Clarkson has been a part of the Boziwick family for many decades. George Boziwick graduated from Clarkson College of Technology in 1948, and the tradition has continued to this day without any

signs of stopping. George is the founder of R.P. Luce & Company Inc., a manufacturer of heavy-duty cases in Northport, New York, that his son, Richard, now runs. George, at 98 years old, continues to stay active in the company as chief financial officer.

When it comes to carrying on the Clarkson tradition, Caitlin Boziwick '08, a marketing officer for Lifetime Brands, a global provider of kitchenware, in Garden City, New York, says, "It really came down to Clarkson. It was a natural fit."

The Boziwicks have always had an affinity for Clarkson and have always stayed involved, including making a family trip for Reunion. Richard Boziwick '73 was instrumental in the development of the Alumni Association Long Island chapter and was awarded the Golden Knight Award in 1998 for his efforts.

"We are a traditional family, but a family of entrepreneurs. We all have that entrepreneurial spirit," says Emily (Boziwick) Baldwin '11, who is a director of digital marketing at KathodeRay and an entrepreneur in Albany.

George remarks, "We all received a good education at Clarkson, and we have put it to good use."

Richard adds, "They are all successful at what they do, and that is very satisfying to me."



# You make Clarkson possible.

## clarksonimpact2018.com

Supporters like you helped elevate Clarkson's financial support to new heights this past fiscal year (July 1, 2017 - June 30, 2018).

**Total Giving to  
Clarkson University** **\$18,400,000**

**Class of 2018  
Senior Gifts —  
Leadership Level  
Total/Increase**

**111  
164%**

**Loyal Supporters**

(Reh Challenge donors committed to four years of giving)

**4,827**

**Total Giving to  
Clarkson Fund  
\$3,300,000**

**Planned Giving  
Total Gifts  
and Commitments**

**\$10,900,000**

**Annie Clarkson Society  
Living Members**

**582**

Gifts to The Clarkson Fund this year provide scholarship support for students needing financial assistance.

For more information, contact the Department of Development & Alumni Relations at [donorrelations@clarkson.edu](mailto:donorrelations@clarkson.edu) or visit [development.clarkson.edu](http://development.clarkson.edu).

**Total Donors**

**8,138**



**Clarkson**

Learn how your donations have made a significant impact in 2018:

**clarksonimpact2018.com**



# Annie Clarkson Society Celebrates 25 Years

By Michael P. Griffin MS'00

In 1993, LeRoy E. “Whitey” Hansen ’54 joined the staff of Clarkson and was tasked with establishing the “Miss Annie Society.” Named for one of the University’s founders, the society aimed to promote philanthropic planning and recognize those who provided for the future of the University through deferred giving.

The society prospered, and, in 2007, was renamed the “Annie Clarkson Society” to better reflect Annie’s dynamic role as a founder and visionary of the University. Four years later, the philosophy of the society was broadened to combine a service and education mission, which included outright and deferred gift planning strategies and enabled the University to create lifelong relationships with donors.

Today, the Annie Clarkson Society’s education and service has expanded even further, with a mission to ensure the Clarkson experience for the students of today and tomorrow and to serve all 43,000 alumni and other donors in planning philanthropic and financial goals. It recognizes as members alumni, parents and friends who have either planned a deferred gift or created an endowment for Clarkson.

Younger alumni are an important part of the Annie Clarkson Society, too. The society provides them with value-added services, like education on the philosophy of supporting charities, strategies for annual giving and guidance on how they can have an impact on Clarkson that is meaningful to them as well.

From an initial roster of 75 members a quarter-century ago, the Annie Clarkson Society currently counts 582 living and 301 deceased members. It is nearing \$100 million in known assets and is approaching \$200 million in impact that the society has had and will have on Clarkson.

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*For more information about the Annie Clarkson Society, please contact Director Robert Ahlfeld at [anniesociety@clarkson.edu](mailto:anniesociety@clarkson.edu) or 315-268-7778.*

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## Who was Annie Clarkson?

Born in 1856, the niece of Thomas S. Clarkson was affectionately known as “Miss Annie” — a term of endearment in those days.

Along with her three aunts (Elizabeth, Lavinia and Frederica), Annie Clarkson helped found the Thomas S. Clarkson Memorial School of Technology, serving as trustee from the first organizational meeting in 1894 to her death in 1929.

Annie was fully involved in planning the school and was responsible for much of the school’s early organization, even traveling to other schools to see their buildings as the plans for Old Main were developed.

In 1922, she contributed land for an athletic field west of Holcroft House — now known as Snell Field.

Five years later, she donated 600 acres of the former Clarkson family estate to the college — today’s Hill Campus. That same year, she deeded over Holcroft House (now the admissions building), her ancestral home, where she lived most of her life.

Annie passed away in 1929, leaving to the college over \$1.2 million (approximately \$17.2 million in 2018), the school’s first documented planned gift.

Annie’s spirit, dedication and vision make her the perfect representative of today’s Annie Clarkson Society, which recognizes those who share her beliefs and desire to ensure the Clarkson experience for current and future students.

**[annie.clarkson.edu](http://annie.clarkson.edu)**





**David D. Reh '62, H'17**, benefactor and namesake of the Reh School of Business, passed away on August 18, 2018, at the age of 77.

After graduating from Clarkson with a degree in industrial distribution and obtaining an MBA from the University of Rochester, Simon Business School, Reh worked steadily toward his dream of being an entrepreneur. Over his career, he founded multiple businesses, including Gorbel Inc., Retrotech and Raytec.

As one who was successful in his own ventures, Reh was passionate about sharing that success with others. He and his wife, Sue, established Clarkson's Reh Center for Entrepreneurship in 2009, and both worked tirelessly to promote business and entrepreneurship education at the University. In 2017, Reh was awarded an honorary degree from Clarkson. That same year, in recognition of his unwavering support of and enduring vision for the University, Clarkson named the School of Business the David D. Reh School of Business.



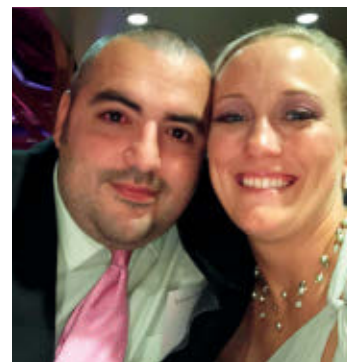
Clarkson University president emeritus and former trustee **Robert A. Plane H'85** passed away August 6, 2018, at the age of 90.

Plane received a bachelor's in chemistry from Evansville College and a master's and PhD from the University of Chicago. He joined Cornell University as a chemistry instructor after graduation, eventually becoming chair of the chemistry department and then provost of Cornell.

In 1974, Plane joined the then Thomas S. Clarkson Memorial College of Technology as president. During his tenure, the University underwent unprecedented growth and received university status from the New York State Board of Regents. Plane spearheaded several fundraising campaigns that allowed for new buildings and renovations on campus; he also cofounded The Clarkson School.



**Vladimir Privman**, physics professor at Clarkson, passed away on April 14, 2018. Born in the Ukraine, Privman obtained his Doctor of Science in Physics from Technion-Israeli Institute of Technology and then pursued postgraduate training at the California Institute of Technology and Cornell University. He was a professor at Clarkson for more than 30 years, his passion for his work and physics never waning during his tenure.



The Clarkson community is mourning the sudden loss of **Mary E. (King) Dyson '07** and **Robert J. Dyson '07**, who were killed in a limousine accident in Schoharie, New York, on October 6, 2018.

Mary obtained a bachelor's in civil engineering from Clarkson, putting it to use building schools in Iraq, where she was stationed during her time in the U.S. Army. She was a co-owner of Upstate Construction Company. Robert earned his bachelor's in interdisciplinary engineering and management from Clarkson and worked at the Stebbins Engineering and Manufacturing Company.

They are survived by their son, for whom Clarkson has made provisions for University attendance.

**Howard Lechler '48, MS'53, H'78**, trustee emeritus, passed away on June 3, 2018.

After serving for almost three years in the U.S. Navy during World War II, Lechler earned his bachelor's and master's degrees in civil engineering at Clarkson, staying on at the University after graduation as an assistant professor for one year. He went on to start Cives Steel Company in Gouverneur, New York.

Throughout his career, Lechler was a strong supporter of the University. He was awarded an honorary degree from Clarkson in 1978, and later served on the Board of Trustees from 1974 to 1984. With his wife, Mary Lou, he created the Howard E. '48 and Mary Lou Lechler Endowed Scholarship Fund, and in 2015, established the Howard Lechler '48, MS'53, HD'78 Director in Construction Engineering Management Endowment.

## NEW TRUSTEES



**Georgia Keresty '83** is the global head of Medical Sciences & Development Operations at Takeda Pharmaceuticals R&D. She oversees the enabling scientific and medical functions in R&D.



**David A. Walsh '67** is a retired executive vice president and COO of United Therapeutics, with over 40 years of research, chemical process development and corporate management experience.



**Rajan Raghavan '82**, serial entrepreneur, is CEO of The Fabric, which supports and funds companies in the cloud/IoT infrastructure space.



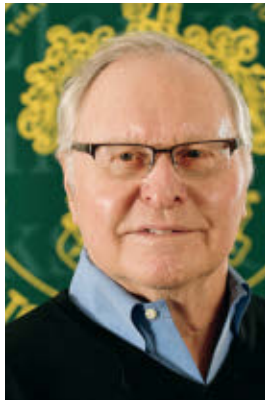
**Kenneth S. Lally '79** is the owner and director of SimuTech Group Inc., which specializes in ANSYS software sales, consulting, training and tech support.



**Robert A. DiFulgentiz '76** is the president and COO of Koch Chemical Technology Group LLC, which is involved in many aspects of engineered equipment for processing industries.



**W. Ashley Twining '82** is president of the Viking-Cives Group at Cives Corporation. The group manufactures municipal truck equipment and snow and ice removal equipment. Over the years, he has enjoyed a successful career at the Cives Corporation.



**Dennis G. Weller '71** is the founder and chairman of the board of Structural Associates Inc., a general construction and construction management firm established in 1975.



**Peter J. Devlin '80** is the president and CEO of Fish & Richardson, one of the top intellectual property and litigation firms in the nation.



**Cody A. Rosen '13** is the executive vice president and a sales representative for Kimco Steel, an innovator in new steel, scrap metal and recycling.



## CLARKSON TRUSTEES

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President  
Viking-Cives Group

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Executive VP and COO (Ret.)  
United Therapeutics

Dennis G. Weller '71  
Chairman of the Board  
Structural Associates Inc.

Robert R. Ziek Jr. '78  
President  
ZSource Ltd.

## Vision of a Clarkson Education

The Clarkson University educational experience is designed to provide talented and ambitious students with the knowledge and skills necessary to achieve positions of leadership within their chosen profession. The combination of Clarkson's strong, technologically-rich curricula and state-of-the-art teaching and research facilities, coupled with an unparalleled commitment to a friendly learning environment and to students' personal development, uniquely prepares Clarkson graduates to excel in their chosen professions and to lead rewarding and creative lives.

*In addition to attaining mastery of the core knowledge within his or her field, a Clarkson education is designed to enable students to:*

- solve real-world, open-ended problems with creativity and risk-taking to obtain solutions that are practical and sustainable, including those they encounter in state-of-the-art research under the direction of distinguished faculty;
- develop and refine exceptional communication skills with an awareness of potential cultural differences;
- lead effectively and work productively within disciplinary and multidisciplinary teams composed of members with diverse interests and backgrounds;
- excel in using computing and information technologies;
- learn through instruction and guidance by nationally recognized faculty whose commitment to both teaching and research has made Clarkson a nationally ranked university.

*A Clarkson student's education is greatly enhanced by a personal and friendly learning environment, within a small, residential, nationally recognized University, which:*

- places students at the center of the educational process and where all employees have a commitment to creating an environment that contributes positively to students' overall educational experience;
- draws undergraduates, graduate students, faculty and staff together into a cohesive and stimulating learning community, wherein an atmosphere of scholarship and spirit of research is cultivated;
- uses our campus as a living laboratory to improve learning and uses the wider region to broaden and extend Clarkson's outreach and service;
- provides personal advising and interaction with faculty and staff as well as supportive relationships among students;
- offers many leadership opportunities through co-curricular groups and activities;
- respects and learns from its community of diverse people, backgrounds and cultures.

*Together, these provide a unique educational experience that is directed toward developing the whole person.*

# Clarkson University Financial Report

Balance Sheet as of June 30, 2018

	2018	2017
<b>Assets</b>		
Cash and equivalents	\$14,262,519	\$23,084,002
Accounts receivable, net	8,991,223	10,018,183
Pledges receivable, net	4,062,374	3,807,305
Investments	200,342,109	185,989,185
Notes receivable — students, net	8,784,577	8,674,912
Other assets	4,803,007	4,324,242
Property and equipment, net	192,572,793	191,863,793
Total Assets	\$433,818,602	\$427,761,622

## Liabilities and Net Assets

### Liabilities

Accounts payable/accrued expenses	\$19,650,795	\$14,935,838
Other liabilities	49,564,694	40,307,351
Outstanding debt	73,848,118	74,809,792
Total Liabilities	\$143,063,607	\$130,052,981

### Net Assets

Unrestricted	\$115,541,603	\$131,090,175
Temporarily restricted	46,514,806	39,669,919
Permanently restricted	128,698,586	126,948,547

TOTAL NET ASSETS	\$290,754,995	\$297,708,641
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TOTAL LIABILITIES AND NET ASSETS	\$433,818,602	\$427,761,622
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## Clarkson

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#### EQUAL OPPORTUNITY POLICY

Clarkson University does not discriminate on the basis of race, gender, color, creed, religion, national origin, age, disability, sexual orientation, veteran or marital status in provision of educational opportunity or employment opportunities. This policy prohibiting discrimination on the basis of sexual orientation does not apply to the University's relationships with outside organizations, including the federal government, the military, ROTC, and private employers. Clarkson University does not discriminate on the basis of sex or disability in its educational programs and activities, pursuant to the requirements of Title IX of the Educational Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973, and the American Disabilities Act of 1990, respectively.

The *President's Report* issue is sent annually to international colleagues in higher education, alumni and other friends of the institution.

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# Fisher Associates New CEO

## Roseann Schmid '88

### Builds Loyalty and New Markets

By Suzanne F. Smith

These days, workplace demands and employee expectations are changing as fast as the marketplace itself. For today's ambitious and hardworking professionals, the road to the boardroom is rarely a straight line.

Roseann Schmid '88 knows firsthand about taking a winding path to career success. Last January, Schmid was elected CEO of Fisher Associates, a Rochester, New York-based engineering firm with additional offices in Buffalo, Syracuse, Erie and Pittsburgh.

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One in five  
Clarkson alumni  
leads as a CEO,  
senior executive  
or owner of a  
company.

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Fisher Associates provides professional design services in the transportation, energy and land development sectors. Schmid has been with the company for 11 years, serving first as a project manager for the Transportation Group and then as Highway Group manager, director of the Transportation Market Sector and vice president. She is just the third CEO in the company's 34-year history and assumes leadership at a time of expansion and growth in new markets.

"[Roseann's] strong combination of technical knowledge and communication skills is unique to engineers and contributes to her effectiveness as a leader," says Robert Goossen, who served as CEO and president of Fisher before stepping down from that role in December in preparation for his retirement.

Back in 2007, when Schmid first joined the company, it was as a part-time project manager and engineer.

"At the time, I was working part-time at an engineering consulting firm so that I could manage the work-family balance I needed while my children were young," she says.

"When Fisher called me about a job opportunity, one of the first things I asked is if they knew I was working part-time. They said, 'we need a great project manager, and you have a great reputation.'"

That great reputation, along with a strong work ethic and solid technical and people skills, carried her professionally for more than a decade as she balanced demanding jobs and a growing family.

Schmid began her career at General Dynamics after graduating from Clarkson with a degree in



Roseann Schmid '88

civil engineering. "I always excelled in math and science, and I have always been inquisitive. Growing up, I learned how things worked and how to fix things. My father never treated my sister and me differently from our brother. We all learned to change the oil, mow the lawn and clean the stables."

In 1994, Schmid and her husband relocated to the Rochester area, and she joined Erdman Anthony as a project manager. Three years later, after her daughter was born, she returned to work part-time. For the next 10 years she maintained a flexible work schedule as her daughter, and then a son, went through childhood.

"People had faith in my work and knew that I got things done, and that did not change when I went part-time," she says. "I was really putting in full-time hours but I had flexibility and my own schedule. I always made sure that my schedule worked not just for me but also for my colleagues."

Today, that family-friendly flexibility is built into the company culture at Fisher.

"When you give people some flexibility, they are more committed to their work and the company," she says. "The work has to get done. Sometimes family comes first, and sometimes the job comes first. If a problem develops, you address it with the individual; you don't change the policy."

Schmid believes that building trust and loyalty is key to successful leadership. "When you set a strategy for a company, you need the support of your employees, who need to trust that you and your leadership team are making the right decisions on behalf of them and the company."



# Clarkson

DEVELOPMENT OPERATIONS

Box 5510, 8 Clarkson Avenue

Potsdam NY 13699

## CLARKSON@125



Students show off new swag in the lead up to Clarkson's 125th anniversary of its founding in 1896. Clarkson@125, the University Strategic Plan, includes celebrations of key milestones in academic programs, research, student organizations, clubs and sports.



CLARKSON UNIVERSITY

IGNITE ANNUAL REPORT

2017-18

# REPRINT

▶▶▶ 299 days of ▶▶▶



# REPRINT

*We are excited to share with you this report, which outlines the inaugural year of Clarkson Ignite. Although the report was initially published over the summer of 2018, the energy, creativity and enthusiasm that the program generated was remarkable and warrants celebration with the larger community of supporters and friends. Ignite, well into its second year, continues to provide inspiration and resources for Clarkson's dreamers and innovators, and we look forward to keeping you up-to-date on its impact.*

### Ignite!

More than ever, today's innovation occurs at the intersection of business, engineering, science and technology — an intersection at which Clarkson Ignite educates students. Implemented through both a major capital project that will transform the heart of campus and curricular and extracurricular innovation programming that will impact every student, Clarkson Ignite is Clarkson's plan for producing graduates that can make connections across disciplines to create extraordinary economic and societal value. With strategic guidance from Deans Lado and Jemison, leaders at the University have partnered with each other, with alumni and with our corporate partners to create exciting opportunities that cross school and departmental boundaries.

*"The deans are working together to create an ecosystem in which you are defined by the work you do together as opposed to the department you represent."*

— Bill Jemison, Dean of the  
Wallace H. Coulter School of  
Engineering,  
Tony Collins Professor of Innovative  
Engineering Culture



(l-r) **Augustine Lado**, Interim Dean of the Reh School of Business, and **Bill Jemison**, Dean of the Wallace H. Coulter School of Engineering

### Ignite Campus-Wide Leadership

(top row) **Charles Thorpe**, School of Arts & Sciences; **Gina Lee-Glauser PhD'94**, vice president for research and scholarship; **Susan Powers '83, MS'85**, Institute for a Sustainable Environment; **Matthew Draper '02, MBA'03**, Development & Alumni Relations and Shipley Center for Innovation; (bottom row) **Kerop Janoyan**, Graduate School; **Peter Turner**, Institute for STEM Education; **Michelle Young**, Library; and **Anastasia Thomas**, Plant Operations & Management.





## Letter From the Managing Director

Two hundred ninety-nine days ago, a new framework for enhancing the Clarkson educational experience was born. This framework, now known as Clarkson Ignite, represents a forward-thinking integration of innovation resources across the Clarkson community. These expanded investments in facilities, curriculum and programming will produce graduates across all disciplines who are literate in innovation and equipped to meet the needs of the rapidly evolving economy.

Over the last five years, I have had the privilege of leading Clarkson's nationally ranked Reh Center for Entrepreneurship. During this time, I saw firsthand the tangible skill sets students develop by engaging in experiential entrepreneurship programming. These students were able to recognize opportunities, mitigate risk, make decisions, marshal resources and lead their teams through complex problem-solving. Although many students did not intend to found firms immediately after graduation, through our programming, they were developing an entrepreneurial mindset and a skill set that proved transferable to future employment.



**Erin Draper '03, MBA '14,  
Managing Director**

Clarkson Ignite aims to instill these new ways of thinking and doing in all Clarkson students. The Ignite ecosystem encompasses the capital project and five key elements:

**CURRICULUM**

**EXTRACURRICULAR ACTIVITY**

**RESEARCH**

**MAKING**

**BUSINESS INCUBATION**

The cornerstone of our ecosystem is the Innovation Hub, a major renovation of the Andrew S. Schuler Educational Resources Center. The proliferation of innovation spaces in higher education is evident; virtually every university touts leadership and entrepreneurship in its pedagogical approach. Clarkson clearly differentiates its approach with powerful intentions to fast-track innovation with impact at the intersections of disciplines. Building from our foundation of technology innovation, our competitive advantage is a University-wide environment that sparks intellectual curiosity and replicates real-world connections that students will make when they graduate. We are excited to share a glimpse of the progress that has been made on the capital project and in each of the five key elements since beginning the journey in August 2017. While much has been accomplished, we still have a long way to go, and we eagerly anticipate your feedback and involvement in this truly transformational process.

Thank you for your support as we continue to build a culture in which students and faculty work across disciplines to solve the world's toughest problems.

Erin Draper  
Managing Director, Clarkson Ignite



### 2021 New Student Entrepreneur Challenge

Over the summer, teams of students collaborate to begin designing a new product, service or process that can potentially transform daily life.

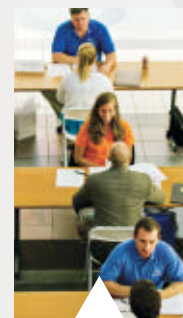
### Orientation: President Tony Collins Announces Ignite



### J.P. Allen: Technology and Equality

A discussion about how people, organizations and information technology combine to change the world, particularly in contexts where business plays an important role in socio-technical change and innovation.

### Speed Sell Competition



DAY

1

55

72

81

## In the Classroom

Clarkson Ignite aims to inspire all students, regardless of major, to think and do in a new way. An important and effective way to reach this goal is through the curricula and coursework required in classes. This year, the University hired innovation faculty, implemented new minors and courses and updated courses.

Faculty partnerships within national organizations were fostered, and faculty workshops were offered on campus through Ignite to expose faculty to new teaching methodologies and to build understanding of problem-based learning.



### Daved Barry

Daved Barry, the Reh Family Endowed Chaired Professor in Innovation and Entrepreneurship, joined the Reh School faculty in September 2017 and has been using studio methods derived from design and art schools to teach innovation. Daved is primarily interested in how design-, art- and humanities-based approaches to management and organization can be applied to innovation, leadership, entrepreneurship, organizational design, workplace and strategy development, and change management. Daved will provide leadership and inspiration for new majors and minors in innovation.

### Two New Innovation Minors

Feedback from students, employers and alumni, coupled with cross-campus interest, indicated that a broader mix of students enrolled in courses together was critical to driving innovation and new ideas. Faculty in the Reh School of Business determined that offering minors serving all undergraduates across campus would allow students taking upper-level innovation and entrepreneurship courses to mix and would create a richer educational experience. These two new minors are anticipated to begin in the 2018-19 academic year.





### 3 Day Startup

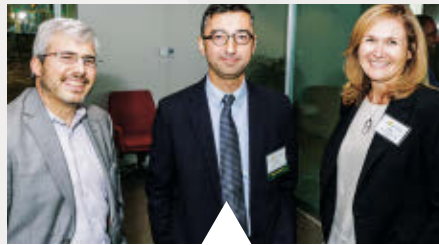
A 72-hour campus workshop that teaches entrepreneurial skills to students in a hands-on environment.

82

### ROUNDTABLE SALON — Innovation: Clarkson's Past, Present and Future

HOST: Peter Devlin '80 • MODERATOR: Kerop Janoyan

PANELISTS: Ron Ayers '02, Trustee Daniel Heintzelman '79, Amy Villeneuve '86



88

### President Tony Collins: "Igniting Leadership at Clarkson University"

A talk on how innovative leaders work to identify opportunities, mobilize resources and motivate key personnel.

95

## CURRICULUM



KEEN Partnership – Prof. Laurel Kuxhaus



IBM Design Thinking



The President's Challenge

### Faculty Partnerships — KEEN

This year, approximately twelve Coulter School of Engineering faculty have engaged with KEEN, a foundation that connects faculty across America in the common goal of fostering entrepreneurial engineering students. The collaboration through KEEN has provided faculty with resources and techniques needed to inspire students and equip them with an entrepreneurial mindset.

### Faculty Workshop — Entrepreneurship: It's a Life Skill

Entrepreneurship education is no longer reserved for the business student niche population. Heidi Neck, PhD, the Jeffrey A. Timmons Professor of Entrepreneurial Studies at Babson College, hosted a workshop for 30 faculty and staff from the Business, Engineering and Arts & Sciences schools. The workshop provided a basic understanding of the power of teaching and building an entrepreneurial mindset in students, a ready-to-implement problem-based learning classroom activity and an e-copy of Heidi's award winning book, *Teaching Entrepreneurship: A Practice-Based Approach*.

### Corporate Innovation Minor

Students who enroll in the corporate innovation minor will develop the ability to recognize opportunities, hone critical thinking and problem-solving skills, address unstructured or ill-defined problems and develop persuasion and negotiation skills. Example courses include Customer-Focused Design, Commercializing Innovation, Management of Technology, Negotiations and Relationship Management and an experiential invention capstone.

### Faculty Workshop — IBM Design Thinking

Over the course of three days, IBM sent two of their designers to lead nearly 50 Clarkson faculty, staff and students through four unique IBM Design Thinking workshops. Design Thinking is a process for creative problem-solving that is being used widely all over the world in companies like IBM, KPMG, GE and SAP.

### Innovation Hub Fellows

In the upcoming academic year, we will be recruiting four new Innovation Hub fellows. These Ignite fellows will be assigned to a specific ecosystem element and will work with the managing director and ecosystem leaders to identify strategic priorities and direction for their designated areas. The fellowships will provide a competitive opportunity for graduate students to formally engage in the Ignite innovation ecosystem while earning their degrees.

### New Product Development and Marketing Minor

This minor is for students interested in exploring concepts and tools associated with designing and marketing new products. Courses support four dimensions of product development: **A.** planning new product life cycles; **B.** understanding the social and environmental impact of technical solutions; **C.** establishing functional, technical and aesthetic components of product design; and **D.** generating virtual and physical prototypes. Coursework in this minor also supports learning about marketing new products.



The Studio: Official Opening

DAY

99

100

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**Andreas Resmini:**  
**"Building the**  
**Post-Digital Studio"**  
 Design master class  
 for faculty.



**David D. Reh**  
**School of**  
**Business**  
**Dedication**



## Beyond the Classroom

Clarkson Ignite aims to provide students with more than just innovation skill sets taught in the classroom. Resources and inspiration are offered to students after class, and the larger campus community is engaged through campus-wide events.



**Rick Klauser '85, Alumni Success Series**

### Speaker Series

Inviting outside experts not only brings in critical knowledge and viewpoints but also creates opportunities to connect, inspire and motivate. Clarkson Ignite partnered with the Honors Program and the Office of Development & Alumni Relations to host a series of nine events, including talks, workshops and faculty seminars, that drew over 400 attendees in total.

- J.P. Allen, author — "Technology and Inequality: Concentrated Wealth in a Digital World"
- Tony Collins, President, Clarkson University — "Igniting Leadership at Clarkson University"
- Andreas Resmini, information architect — "Building the Post-Digital Studio"
- Ken Camarco '85, president and founder, Boundless Breakthroughs LLC — Alumni Success Series
- Jeff Wenzel and Shawn Neal, founders, Woodshed Agency — "Achieving Success in Crowdfunding"
- Rick Klauser '85, CEO, Sprout Foods — Alumni Success Series
- Heidi Neck, Jeffry A. Timmons Professor of Entrepreneurship, Babson College — "Teaching Entrepreneurship Across Disciplines"
- Tyler King and Ann Novelli, designers, IBM — IBM Design Thinking Workshop
- Guha Bala and Jan-Erik Steel, Velan Studios and Velan Ventures — "Leadership, Entrepreneurship and Game Design"
- David Glenn '82, CEO, Kaleida Systems Inc. — Alumni Success Series



## Ken Camarco '85: Alumni Success Series



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## Nurturing Future Innovators & Entrepreneurs: Incorporating Technology in the Classroom

Clarkson's Department of Education and the Institute of STEM Education partner with the Museum of Innovation and Science in Schenectady to host an evening that showcases technology integration in the classroom.

134



## Jeff Wenzel and Shawn Neal: "Achieving Success in Crowdfunding"

A talk on the secrets to creating and executing a successful crowdfunding campaign.

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## EXTRACURRICULAR ACTIVITY

### President's Challenge

During first-year student orientation, President Collins challenged students to identify opportunities for universities to use intelligent or autonomous technologies to positively impact how we live and learn on a college campus. He also announced \$25,000 in prizes.

The kicker? Teams must be multidisciplinary, with representation from at least two of Clarkson's three schools. Twenty-nine teams, made up of over 136 students from 27 majors, have taken the challenge. Teams presented their ideas, developed through coursework or as extracurricular projects, at the first annual President's Challenge Showcase on April 13, 2018. The President's Challenge will be an annual event, providing a unique experience that allows students to identify opportunities, think creatively to find solutions and develop a multidisciplinary problem-solving skill set.

### Problem-Based Learning: The President's Challenge

Professor Jim Carroll, electrical and computer engineering, was one of the first faculty to identify the power of using the President's Challenge within his existing capstone electrical engineering course. Teams of students learned IBM Design Thinking methodologies to identify

opportunities to improve life and learning on our campus and spent extra time during the semester developing and prototyping autonomous robotic solutions. Project topics varied from robotic admissions tours to food delivery robots and snow and ice management.

### Ignite Fest

Ignite Fest, a new tradition at the University, celebrates Clarkson's innovation and organizational resources and activities. During this daylong festival, Ignite hosted innovation activities and showcased over 35 campus resources. The celebration ended with an awards ceremony and a spirited send-off from Clarkson's pep band.

### Student Leadership

When the sisters of the Delta Zeta sorority heard about the President's Challenge, they wanted to get involved by hosting an informative workshop for students on green building, an area of expertise for both current and past members. The workshop showcased new technology being used in the field by Delta Zeta alumnae. Faculty described the current state of the industry, and participants worked together to identify opportunities for improvement.



First-year student team, Immaterial Industries, was selected as the top team in the inaugural President's Challenge for their intelligent student-advising software solution; the team won \$3,000 and will be featured on the President's Challenge trophy (pictured) in the Innovation Hub.

(l to r): Erin Draper, Jonathan Burbank, Alden Minard, Demetrius Boone, Jackie Ojala, and President Collins. Missing: Allison Tessier



**Rick Klauser '85:  
Alumni Success  
Series**

**DAY 135**

**NY BizLab:  
Clarkson Lunchtime  
Entrepreneurship  
Series**

A monthly event in Schenectady that features regional talks by successful entrepreneurs.

**136**



**Ignite Fest**

A full day of activities in the Student Center, including presenters, a resource fair, networking opportunities and student pitches.



**137**

## Ignite Innovation in Research

The Clarkson Ignite Research Fellowship program provides funding to recruit and support highly talented PhD students for up to five years in interdisciplinary faculty research projects that can potentially impact society at the national and international levels. This highly competitive program was created with the generous support of Ken Solinsky '71, Charlie Craig and Clark Nicklas '71, who each funded two fellows.

### Ignite Research Fellowship Program

The program sought proposals in four multidisciplinary research focus areas: advanced materials development, healthy world solutions, data and complex systems analytics and next-generation health technologies.

In the inaugural year, 35 collaborative proposals by 68 faculty from both Potsdam and Capital Region campuses were submitted for the first phase of the competition. All proposals were peer-reviewed by internal and external experts, and an internal selection committee used these expert reviews to select 13 teams for a final "Shark Tank" style competition at which teams pitched their proposals.

The response to the program was overwhelmingly positive and highlighted a key focus area of Clarkson Ignite — bringing disciplines together in projects with real-world applications.

### Awarded Solinsky-Ignite Research Fellowships

**Marko Budisic (Math), Pat Piperni (MAE) and Brian Helenbrook (MAE)** — Data & Complex Systems Analytics: "Enhancing aerodynamic optimization using dynamic mode decomposition of unsteady flows"

**Zijie Yan (CBE) and Jan Scrimgeour (Phy)** — Advanced Materials Development: "Hybrid nanomaterials with plasmonic-enhanced upconversion luminescence"



**Ignite Research Fellowship judges**



## ROUNDTABLE SALONS Innovation: Clarkson's Past, Present and Future

November 28, 2017

HOST: Judy Foster Glick

PANELISTS: Ken Camarco '85, Kathryn  
Campbell '03, Rick Klauser '85, Bill Thomsen '78

November 29, 2017

HOST: Clark Nicklas '71

PANELISTS: Mike Brand '80, Kevin Hartnett '95,  
Bob Ziek '78

## Delta Zeta President's Challenge Event



## Jim Sterne: "Artificial Intelligence for Marketing: Getting Started"

Webinar on the evolving world  
of artificial intelligence and  
machine learning and how it  
can be applied to marketing  
practices.

## Teaching Entrepreneurship Across Disciplines

Faculty from the Associated  
Colleges learn about best  
practices and tools for  
integrating entrepreneurship  
into courses. Sponsored  
by USASBE LOCAL and the  
Associated Colleges.

149 & 150

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151

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## RESEARCH

### Awarded Craig-Ignite Research Fellowships

Mario Wriedt (Chem) and David Mitlin (CBE) — Advanced Materials  
Development: "Advanced CO2 capture capacities by porous carbons  
derived from biomasses"

Selma Mededovic Thagard (CBE), Tom Holsen (CEE) and Michelle  
Crimi (E&M) — Healthy World Solutions: "Development of a plasma-  
based process for treatment of perfluoroalkyl substances (PFASs) in ion  
exchange brine regenerant solution"

### Awarded Nicklas-Ignite Research Fellowships

Daqing Hou (ECE), Stephanie Schuckers (ECE) and Mahesh  
Banavar (ECE) — Data & Complex Systems Analytics (primary area)  
and Healthy World Solutions (secondary area): "Next generation  
behavioral biometrics: Capturing more application usage behavior"

Chen Liu (ECE) and Tino Tamon (CS) — Data & Complex Systems  
Analytics: "Using low-level hardware features for runtime malware  
detection and defense"



Selma Mededovic Thagard



Jan Scrimgeour



Daqing Hou and Stephanie Schuckers

## Research Commercialization: A Shipley Center Initiative



### Ken Visser

Hearkening to the call for proposals for the Institute  
for a Sustainable Environment's annual sustainability  
fund project, Professor Ken Visser proposed a ducted  
wind turbine that can potentially revolutionize the  
residential market for wind energy. One of his turbines  
will be installed on the roof of Clarkson's Technology  
Advancement Center. This project is the outcome of  
true innovation that started with research in Professor  
Visser's lab and led to a company supported by NEXUS-  
NY that will now contribute to our campus' sustainable  
energy production.

### Michelle Crimi '95

NEXUS-NY aims to help New York researchers create scalable,  
clean energy companies. Through this program, Professor and  
Director of Engineering and Management Michelle Crimi '95 and  
graduate student Fiona Laramay have co-founded RemWell, LLC.  
Their goal is to advance the development of an underground reactor  
for treating persistent toxic contaminants found in groundwater  
that is used for drinking water. Their underground reactor,  
InSRT, significantly reduces the energy required to remove these  
contaminants from water. With the funding, experiential curriculum,  
mentorship and connections from NEXUS-NY, Michelle and Fiona  
are creating a connection between technology, business and  
innovation to achieve a critical goal: cleaning water.

## ROUNDTABLE SALONS

### Innovation: Clarkson's Past, Present and Future

January 9, 2018

HOST: Shawn '87 and Debby Rosenberger

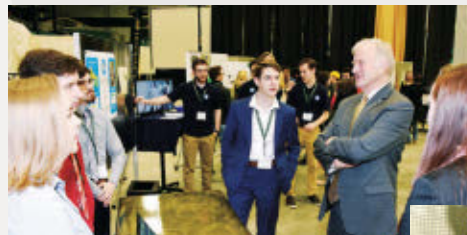
PANELISTS: Mike Bissonette '79, Blayne Hartman '75, Andrew Zaferakis '98

January 10, 2018

HOST: Dave '83 and Sheryl Heacock

PANELISTS: Rick O'Connor '86, Rajan Raghavan '82, Michele Gauger Reiter '01

### President's Design Challenge: Registration Opens



### President's Design Challenge Kickoff Event With President Tony Collins

Challenge information, project idea inspiration and brainstorming sessions.



DAY 191 & 192

192

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## A Making Culture



Students meet about the President's Challenge in the Studio.

### The Studio

This fall, we challenged students to transform an existing computer lab in Bertrand H. Snell Hall into a space for making, collaboration, creativity and design — and they delivered. With a lot of hard work, creative problem-solving and a few pizzas, they created the Studio, a space outfitted with whiteboard walls, flexible furniture, 3-D printing and other rapid prototyping equipment, a large-format printer and teleconferencing equipment. The flexibility of the space allows it to function as a classroom, student work space, club meeting room and workshop venue.

In January, designers from IBM spent 2 ½ days leading workshops that introduced our campus to IBM Design Thinking and trained additional workshop facilitators. IBM Design Thinking has since been used in

entrepreneurship, engineering and management, and electrical engineering classes, as well as in workshops for the President's Challenge.

The Studio is staffed primarily by Liesl Ulrich-Verderber, a current MBA student, as part of her Innovation Hub Fellowship. Liesl leads a team of undergraduate students from the Clarkson Innovation Network, a newly formed student club. These students, who have been trained in the Studio's equipment operation and IBM Design Thinking, volunteer as facilitators more than 25 hours per week.

The Studio also serves as a space in which to test equipment, furniture and staffing models to be used in the ERC's Innovation Hub.



Mike Desens '83, IBM executive, organized for participants to build an IBM Design Thinking mindset and determine how best to direct students to user-centered outcomes through IBM Design Thinking practices.

[illegible]

A chance to experience IBM Design Thinking methods and apply them to a sample problem.

Students learn how to come up with winning project ideas by asking better questions. Hosted in the Studio.

## MAKING

## A photograph of Nikolas Lamb, a young man with dark hair, wearing a black t-shirt. He is focused on adjusting a small, green, multi-jointed robotic arm or sensor module. He is holding it with both hands, and his face is close to it. The background is slightly blurred, showing what appears to be a workshop or lab setting with various equipment and a bright light source. The name "Nikolas Lamb" is printed in white text at the bottom of the image.

Nikolas Lamb

∞ | THINK. MAKE. IGNITE.



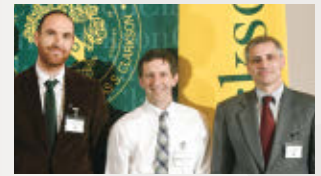
While much has been learned this year through the Studio, the planned MakerSpace in the Innovation Hub will have the greatest impact on the making component of the Ignite ecosystem. The facility is slated to open in late 2018 or early 2019 and will be outfitted with equipment funded through a grant from the Emerson Foundation, as well as several generous gifts from individual donors. The Dorf MakerSpace will allow all students to access the technology and tools necessary for rapid prototyping and the production of physical products. It will be a space for students and faculty to work together in a hands-on environment and will allow for the physical manifestation of ideas that, in the past, were often constrained by digital design.

**President's  
Design  
Challenge  
Workshop:  
*Ideate***

The Studio hosts a workshop focusing on learning to brainstorm better.



**Campus-Wide Unveiling of  
ERC Plans**



**Inaugural Ignite Research  
Fellowship Pilot Grant  
Program**

Thirteen finalist teams are selected to compete in the competition on March 1, 2018.

**DAY 212 & 213**

**214**

**215**

## Supporting Founders, Incubating Companies

Supporting company founders is a key element in the Ignite ecosystem. Through hands-on programming, Clarkson Ignite provides the spark of inspiration and opportunities for students to present their work for funding and feedback. The Shipley Center for Innovation, a key Ignite ecosystem leader, then delivers customized support for founders as they pursue the development, commercialization and launch of their companies.

### 3 Day Startup

The 3 Day Startup (3DS) program enables students to get their feet wet in the startup environment. Over three days, students work with a facilitator to formulate ideas, form teams, discover customers, prototype and test products and finally pitch their ideas to a panel of investors and mentors. Two of the teams formed during the 2017 event have continued pursuing their businesses throughout the year.

### Business Plan Competition

On April 6, 25 teams participated in the North Country Regional Business Plan Competition in the Student Center. The competition is an annual opportunity for students to pitch their business ideas and receive feedback and, potentially, seed funding. Winners must meet with a representative from the Shipley Center for Innovation to set milestones and effectively utilize the startup funding.



**2018 North Country Regional Business Plan Competition**



**President's  
Design  
Challenge  
Workshop:  
Design and  
Prototype**

In the Studio,  
students learn how  
to turn ideas into  
reality.

219 & 220

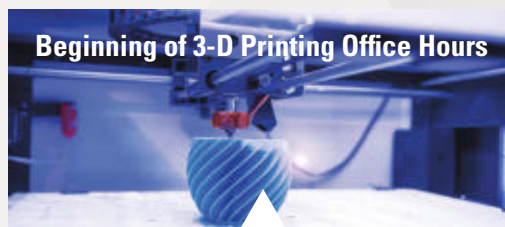
**ROUNDTABLE SALON —**

**Innovation: Clarkson's Past, Present and Future**

HOST: John Buyers '66

PANELISTS: Jennifer Karekos '14, MBA'15, Lisa Napolione '87,  
Ray Skowrya P'11

222



**Beginning of 3-D Printing Office Hours**

225

**Guha Bala and  
Jan-Erik Steel:  
"Leadership,  
Entrepreneurship  
and Game Design"**

Leading game technology  
developers share  
their creative and  
entrepreneurial journey.



239

**BUSINESS INCUBATION**

**Downtown Incubators**

Peyton Hall, Old Main and Damon Hall currently house 31 businesses and provide approximately 30,000 square feet of incubator space. Occupancy and demand for the incubator and its services continues to grow, and phase two of the Damon Hall renovation will add approximately 11,000 additional square feet over the next six months. These incubators connect entrepreneurs to resources and opportunities and create economic value for our region.



**Stephanie Schuckers**

NexID Biometrics, LLC, one of the first businesses at the Peyton Hall incubator, was acquired by Precise Biometrics in 2016. NexID, a biometrics firm, was founded by Clarkson Professor and Director of the Center for Identification Technology Research (CITeR) Stephanie Schuckers. In the acquisition, Potsdam became the U.S. headquarters for Precise, enabling the company to invest in and grow its U.S. operations. Day-to-day operations at Precise are overseen by Mark Cornett '79, the former director of Clarkson's Engineering and Management program.



**Josh Parker**

Josh Parker, founder and CEO of Parker's Real Maple in Canton, New York, moved his manufacturing and shipping operations to the St. Lawrence County Industrial Development Agency in the Canton Industrial Park. Josh appeared on Shark Tank in October 2016. He currently has 20 employees, and his products are sold by large national retailers such as Costco, Whole Foods Markets and Wegmans. While at Clarkson, Josh met weekly with Erin Draper in the Reh Center for Entrepreneurship through the Young Entrepreneurs and Innovators program, had an office in the Peyton Hall incubator and worked with the Shipley Center for Innovation to begin scaling manufacturing operations.



**Garrett Kopp**

Supporting entrepreneurs as they pursue degrees requires a unique approach. When Garrett Kopp asked for the fall 2016 semester off to pursue his business, Birch Boys Chaga, LLC, the University allowed him to take a co-op under the direction of the Reh Center for Entrepreneurship. During the co-op, Garrett launched new products, hired employees and began scaling the business. He has received investment capital and opened a retail store in Tupper Lake in April 2018.

**Inaugural Ignite  
Research Fellowship  
Pilot Grant Program:  
Live Competition**

Clarkson launches the pilot grant program with a "Shark Tank" style competition to foster synergistic campus-wide research collaboration.



**TLC Lightboard  
Studio Demo**

Students learn how to utilize the lightboard for their President's Challenge video.

**President's Design Challenge  
Workshop: Present**

Students learn the most effective ways to deliver important information about their projects in the Studio.

**President's Design Challenge:  
Project Submission Deadline**

Twenty-nine teams officially submitted projects.

**DAY 242**

**246**

**247 & 248**

**271**

## Ignite = Programming and Schuler ERC Capital Project

*"Knowledge, skills and cross-cultural competence: these are critical attributes world leaders need to be successful. Clarkson Ignite enables the development of the innovative and entrepreneurial mindset that our students and graduates need to traverse disciplinary, geographical and cultural boundaries and thrive in an increasingly interconnected world."*

— Augustine Lado, Interim Dean  
Reh School of Business and  
Richard '55 and Joy Dorf Chair  
in Entrepreneurship and Innovation

### What's to come?

Clarkson University is an institution on the move. We are creating programs that are exciting, unique and boundary-spanning. This continued evolution requires strong relationships with alumni and industry partners. Contact Ignite for details.

### Programming:

- One-year, project-based Masters of Science in Biomedical Engineering.
- Newly revised innovation and entrepreneurship major and accompanying minors.
- Continued investment and support for innovation challenges.
- Innovation literacy workshops.
- Increased student capacity for rapid prototyping.
- Innovation Hub fellowships for graduate students.



THE CLARKSON

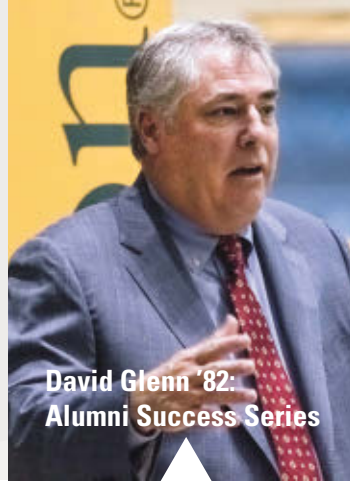




### North Country Regional Business Plan Competition

Twenty-five student teams pitch their business ideas for a chance to win funding.

278



### David Glenn '82: Alumni Success Series

285



### The President's Challenge

### President's Design Challenge Showcase and Awards Ceremony

The President's Design Challenge teams display their projects and are honored in the awards ceremony.

285

### NYS Business Plan Competition

299

## BUILDING FOR THE FUTURE

### What's to come?

#### ERC Capital Project\*:



#### July 2018

- Content Creation Suite
- Teleconferencing Facility
- Group Study and Presentation Rooms
- Open Collaboration and Study Space
- Library Compact Shelving

#### December 2018

- Ignite Offices
- Support Services Stations
- Clarkson University Archive

#### Future Phase

- Flexible Classroom
- Two Conference Rooms

\*Timeframes are approximate

#### May 2018

- MakerSpace
- Library Circulation and Related Offices
- Career Center
- Black Box Classroom

#### Future Phase

- Atrium
- Student Collaboration Areas
- Group Study Rooms

*"Learning and innovation go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow."*

— William Pollard



ARCH



MAKING



BUSINESS INCUBATION

IGNITE ECOSYSTEM



Clarkson™

Erin Draper, Managing Director

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