

Brian Tande, Ph.D.

9/22/2024

Dear Search Committee:

I am writing to express my interest in the position of President of South Dakota Mines. With over two decades of experience in academia and industry and deep roots in the Upper Great Plains, I would be honored to lead a university that shares my commitment to fostering innovation, driving economic growth in our region, and developing the next generation of scientists and engineers. Below I will highlight my leadership experience and philosophy, describe how I have facilitated growth in enrollment and research at my current institution, and provide examples of how I have engaged alumni and other external stakeholders.

Leadership Experience and Philosophy

For the past five years I have served as the Dean of the College of Engineering and Mines at the University of North Dakota, where I lead a diverse and dynamic college with over 2,600 students and 130 faculty and staff. My ten years of academic leadership experience also includes several other roles, including Department Chair and Director of our Center for Engineering Leadership and Entrepreneurship. Prior to my academic career, I gained leadership experience in industry, including as the Director of Operations for a composite manufacturing company. Through these experiences, I have developed a leadership style that embodies collaboration, transparency, and open communication.

Higher education has changed significantly in recent years and all signs suggest that the rate of change will only increase. Being an effective leader in higher education requires the courage to make the difficult decisions needed to adapt to a changing environment. As a leader, I strive to be open about the challenges we face as an organization and honest about our weaknesses, while also collaborating with many different stakeholders to develop a common vision for the future.

After serving as the Interim Dean for just under a year, I was hired as Dean after a national search just as the COVID pandemic was beginning to close campuses across the US. I was immediately faced with many significant challenges, not the least of which was our budget. At the time, it was expected that our enrollment would drop sharply in the Fall of 2020, and we were asked to make significant cuts to our college budget. Through a series of town hall meetings and numerous discussions with my leadership team, we eventually came to see

this as an opportunity to reorganize our staff positions and streamline operations. Through that process, we created new roles, centralized some responsibilities across the college, and formed new units focused on supporting research, online teaching, and faculty. While these decisions were difficult, the changes we made during that process helped enable the significant growth we have seen in both research and enrollment since the pandemic.

Managing budgets and resources is, of course, a major focus of my time as Dean. Our university operates under a responsibility center management (RCM) budget model, and I frequently discuss our budget during my monthly town hall meetings. While faculty and staff do not typically want to spend all their time thinking about money (nor should they), I have helped them to understand that we can better serve our students and do more impactful research by embracing the budget model's ability to bring more resources into the college. Recruiting more students, serving them well, and increasing external research awards have become our primary objectives these past four years.

This is articulated in our vision we call "20/20 by 2030", which refers to our goals of reaching \$20 million in externally funded research and hiring additional faculty to achieve a 20:1 student to faculty ratio by the year 2030. Guided by this vision, we have grown our college's revenues from roughly \$31 million in FY19 to over \$46 million in FY24. This has allowed us to invest in several new research initiatives, launch new programs (biomedical and aerospace engineering), hire additional faculty and staff, and renovate several spaces in our complex. This was made possible not only by a lot of hard work from many people across the college, but also by having a shared vision that helps get everyone pulling in the same direction.

Growth in Enrollment

While I have served as Dean, we have implemented several initiatives to increase our enrollment, expand the reach of our programs, and provide opportunities for non-traditional students to seek degrees in engineering and science. Since 2019, our college has grown over 20% and now has the largest headcount of any college at UND. This growth has not only provided us the financial resources to invest in new initiatives, but, more importantly, it allows us to produce more of the engineers and scientists that our state and region need to continue to thrive economically.

Those enrollment initiatives include partnerships with other universities to create additional pathways for students to earn an engineering or science degree from UND. I have embraced our role as a member of a statewide system and have partnered with several other 2-year and 4-year institutions in our state. I have also used our well-established distance engineering programs to create new dual degree partnerships with small liberal arts universities across the country. Finally, we have invested heavily in people and programs that help us inspire the next generation of scientists and engineers through outreach activities based on robotics, paleontology, and cyber security.

Facilitating Growth in Research

Since 2019, external research expenditures in our college have grown from less than \$5 million per year to greater than \$15 million. We have accomplished this primarily by making investments in our own people. For example, we have established new faculty-led research initiatives in several strategic areas: advanced materials and manufacturing, artificial intelligence, cyber security, transportation and infrastructure, biomedical technologies, and water resources. Several of those initiatives have since evolved into well-funded research centers and were recently approved by the ND State Board of Higher Education. The college is also a major contributor to UND-wide research initiatives such as our Research Institute for Autonomous Systems and the National Security Initiative.

Growing our research in national security has become a major priority for our college. Last year I created a new position of Associate Dean for National Security, which will be responsible for working collaboratively with faculty across the university to grow our DOD-funded research portfolio, particularly in three areas: 1) rare earth elements and critical minerals for defense applications, 2) hypersonic vehicles, and 3) satellites. We are fortunate that these efforts are supported by strong local connections to the Grand Forks Air Force Base, the newly established US Space Force satellite operations center, and the growing number of defense contractors with a presence in this region. We were also able to gain support from the ND Legislature to renovate a space in our complex to create the National Security Corridor, which contains state of the art facilities for satellite design, assembly, and testing.

Stakeholder Engagement and Fundraising

As Dean, I often work with multiple groups of external stakeholders, including alumni, community partners, industry, employers, government, and the state higher education system. Below I will highlight a few examples of how I have effectively worked with external stakeholders to enhance the college. While South Dakota Mines has its own unique set of stakeholders, my approach as President would be largely the same and involve frequent engagement to understand their needs, earn their trust, and build mutually beneficial partnerships.

- I successfully made the case for a new engineering and science complex to replace several outdated buildings on the UND campus. This became UND's top facilities priority going into the 2023 ND Legislative Session. I had many conversations with legislators and others about the need for this project and we were ultimately appropriated \$57.4 million for a new STEM Complex. We are currently halfway to our goal of raising another \$25 million for the project from donors and we plan to break ground in the summer of 2025.
- I have worked very closely with our college's development officer and the UND Alumni Association and Foundation. Together we have had significant success

fundraising for the college by sharing our ambitious vision with donors and finding opportunities for them to make an impact. For example, our college's endowment has grown from under \$25 million in 2020 to almost \$40 million today. Thirty-seven new endowment funds have been added since 2020, including five new endowed faculty positions. These endowments pay out over \$1.2 million per year in student scholarships and faculty support.

- We established a Manufacturing Leadership Forum to engage with manufacturers in our region and better understand their needs. Through these discussions we identified gaps in our programs and capabilities related to robotics and automation. We are currently establishing an automation lab with the help of an industry partner who will make a significant annual investment to support the lab. In addition to serving our students, this lab will also serve the needs of manufacturers with specialized training and professional development courses in automation and robotics.

I hope this letter has provided a clear picture of the strengths and leadership qualities I would bring to South Dakota Mines. My experience leading a complex organization, driving enrollment and research growth, securing donor support, and fostering industry partnerships has prepared me to contribute to the continued success of your institution. While my background aligns well with South Dakota Mines' focus on science and engineering, I understand that each university has its own unique culture, challenges, and opportunities. I look forward to spending time learning from faculty, staff, students, and external stakeholders to fully understand the specific needs and vision of South Dakota Mines. I would be honored to further discuss how my qualifications align with this position. Thank you for considering my application.

Sincerely,

A handwritten signature in black ink that reads "Brian Tande". The signature is written in a cursive, flowing style.

Brian M. Tande, Ph.D.
Dean of the College of Engineering and Mines
Professor of Chemical Engineering
University of North Dakota

Brian M. Tande, Ph.D.

SUMMARY OF EXPERTISE AND ACCOMPLISHMENTS

- ❑ Collaborative and entrepreneurial leader with over 20 years of experience in industry and academia.
- ❑ Currently leading UND's College of Engineering and Mines, serving over 2600 students. Focused on innovation and adapting to the evolving needs of traditional and non-traditional students.
- ❑ Founder of two companies which have successfully commercialized and licensed new coatings technologies, including a novel infection control product used by hospitals nationwide.
- ❑ Awarded over \$5 million in research funding as the PI or co-PI for projects related to polymeric materials, rheology, process and product development, infection control, etc.
- ❑ Inventor on 10 issued patents and several pending patent applications.
- ❑ Provider of Six Sigma and process/product improvement training and consulting for corporate clients.
- ❑ Expertise in statistical data analysis, design of experiments (DOE), and other Six Sigma tools.

EDUCATION & CREDENTIALS

UNIVERSITY OF DELAWARE – Newark, DE

Ph.D. in Chemical Engineering, 2002

Dissertation: "Microstructure, Conformation, and Rheology of Hyperbranched Polymers"

UNIVERSITY OF MINNESOTA – Minneapolis, MN

B.S. in Chemical Engineering, 1998

B.S. in Chemistry, 1998

ISO 9001 Lead Auditor Training, 2005

Certified Six Sigma Black Belt, ASQ, 2016

PROFESSIONAL EXPERIENCE

UNIVERSITY OF NORTH DAKOTA – Grand Forks, ND

Dean of the College of Engineering and Mines, 2019 to Present (including 1 yr. as Interim Dean)

Associate Dean of the College of Engineering and Mines, 2018 to 2019

Professor of Chemical Engineering, 2018 to Present

Interim Director of the School of Electrical Engineering and Computer Science, 2018

Director of the Grand Challenge Scholars Program, 2018 to 2019

Highlights and accomplishments include the following:

As Dean:

- Leading a college of over 2600 students and 130 faculty/staff, offering programs in engineering, computing, and geology, and generating over \$45 million annually in tuition, grants, and contracts. Over half of our students are adult learners or other non-traditional students, and we offer the only ABET-accredited distance-learning options in several engineering disciplines.
- Facilitated the creation of new academic programs in systems engineering, biomedical engineering, and aerospace engineering.

- Made investments that provided greater support to our researchers and led the formation of several new research initiatives in the college focusing on materials, manufacturing, artificial intelligence, cybersecurity, and infrastructure. External funding has grown from \$5 million in 2019 to over \$12 million in 2022, with a goal of \$20 million by 2030.
- Built stronger collaborations with other academic and research units on campus. Supported and facilitated the creation of joint faculty positions with UND's medical school and the Energy and Environmental Research Center. Working closely with the College of Arts and Sciences and the School of Aerospace Sciences to build UND's national security capabilities. Continuously looking for additional collaboration opportunities across campus, including joint academic and research programs.
- Created partnerships with other universities and community colleges to increase access for students seeking an engineering degree. This includes a partnership with a consortium of small liberal arts colleges as well as several 2+2 and dual-degree agreements with institutions across the country.
- Worked closely with the UND Alumni Association and Foundation to grow support for students and faculty. During my time as Dean, we have established four new endowed faculty positions, created numerous new scholarship funds, and increased the college's endowment by over 25%. I've also worked to build support among University and Foundation leaders for a planned new facility for the college.

As Associate Dean (June 2018 to July 2019):

- Started the process of updating our Distance Engineering Degree Program, a comprehensive set of ABET-accredited online undergraduate engineering programs geared toward adult learners. Worked with UND leadership, faculty, instructional designers, and third-party partners to improve recruiting, marketing, course design, course delivery, student retention, etc.
- Led the Student Success Center as well as the general engineering unit. Used data to drive projects to streamline and enhance the experience of prospective and enrolled students.
- Managed UND's Grand Challenge Scholars Program, providing students opportunities to gain a global perspective through experiences in research, entrepreneurship, and service learning.
- Served for seven months as interim director of the newly formed School of Electrical Engineering and Computer Science. Collaborated with faculty to merge the operations of the two units and helped recruit the Founding Director of the School.

KANSAS STATE UNIVERSITY – Manhattan, KS

Department of Chemical Engineering, College of Engineering

Associate Professor of Chemical Engineering, 2017 to 2018

Graduate Programs Director, 2017 to 2018

Built research program developing materials for applications in biodefense, food safety, and infection control. Developed a new course in chemical product design. Left to return to my previous institution to serve as Associate Dean.

UNIVERSITY OF NORTH DAKOTA – Grand Forks, ND

Department of Chemical Engineering, College of Engineering and Mines

Department Chair, 2013 to 2017

Director, Jodsaas Center for Engineering Leadership and Entrepreneurship, 2011 to 2017

Faculty Fellow, School of Entrepreneurship, 2016 to 2017

Associate Professor of Chemical Engineering, 2012 to 2017

Assistant Professor of Chemical Engineering, 2006 to 2012

Led a growing department offering both on-campus and distance degree programs at the undergraduate and graduate level. Responsible for managing department finances, hiring, and evaluating faculty/staff,

pursuing funding opportunities, and interacting with alumni and corporate partners. I also served as a member of the College of Engineering and Mines Leadership Team, responsible for creating and executing strategic initiatives.

Summary of Accomplishments:

- Built a research program focused on polymeric material product and process development, including applications in renewable energy and infection control. This work has been funded by both federal and industrial sources, leading to numerous publications and several issued patents. To date, I have been the principal investigator or co-PI on over \$5MM in grants from sources such as the US Department of Energy, NSF, USDA, and NASA.
- Through my role with the Jodsaas Center for Engineering Leadership and Entrepreneurship, I created opportunities for students to develop skills beyond our traditional technical engineering curriculum. This includes seminars and workshops on business, leadership, and entrepreneurship conducted by me as well as alumni and other external speakers.
- As a Faculty Fellow in the School of Entrepreneurship, I worked to create meaningful collaborations between the engineering and business colleges as well as other parts of campus. I co-developed two joint courses designed to bring together engineering and business students to explore new start-up opportunities using the Lean Launch Pad methodology. I also served as UND's co-team leader on the NSF-sponsored Pathways to Innovation program coordinated by Stanford University.
- Initiated UND's Grand Challenge Scholars Program, received approval from the National Academy of Engineering, and successfully raised \$2250,000 for the program in the first two years.
- Developed and taught numerous courses in engineering statistics, design of experiments, product design, chemical separations, process design, etc. Selected by students as the 2010 Outstanding Professor of the Year for the College of Engineering.

INDEPENDENT CONSULTING

2006 to present

Various consulting engagements related to materials, product development, business development, statistics, and design of experiments. Examples include the following:

- Developed a multi-day workshop on statistics and DOE delivered to corporate clients. Topics include descriptive and inferential statistics, regression and model building, factorial designs, screening designs, mixture designs, and response surface designs.
- Worked with several European technology companies to evaluate opportunities in the US/North American market. Activities include evaluating new applications for their technology, establishing a working business model, and identifying potential sales/distribution partners.

TWILIGHT LABS, INC. – Fargo, ND

LUMACEPT, INC. –Fargo, ND

Specialty coatings and materials development and commercialization

Cofounder/ Vice-President, 2005 to Present

Twilight Labs was founded by me and two partners to develop and commercialize a unique coatings technology for products in the hunting and fishing industry. The technology takes advantage of the differences in color perception between humans and animals and was the first product that mimics the full spectral reflectance of waterfowl feathers and other natural objects. The intellectual property for this technology has been patented and licensed to several manufacturers. Lumacept, Inc. was spun off in 2010 as a separate company to develop a related technology in a distinctly different market: UV-C reflective coatings for infection control in hospitals. These coatings are in use by hospitals nationwide and have been commercialized through partnerships with coatings manufacturers and distributors.

TECTON PRODUCTS, LLC – FARGO, ND

Manufacturer of fiberglass composites for the construction industry

Director of Operations, 2005-2006

Quality and Continuous Improvement Manager, 2004-2005

Process Development Team Leader, 2003-2004

Held progressive leadership positions within the company, a manufacturer and supplier to the window and door industry. Led process improvement projects using Six Sigma tools to reduce scrap and increase production capacity. Worked closely with suppliers to improve their capabilities. Was recognized with the company's top award for technical achievement for work reducing defects and variability in incoming materials. Eventually promoted to Director of Operations before choosing to pursue teaching, research, and consulting opportunities.

GE PLASTICS – MOUNT VERNON, IN

Product Developer, High Performance Polymers 2002-2003

Developed polyetherimide and polycarbonate products for the transportation and food service industries.

PUBLICATIONS AND PATENTS

PEER-REVIEWED PUBLICATIONS

1. **Tande, Brian M.**, Wagner, Norman J., Jeong, Miyoun, Mackay, Michael E., and Craig J. Hawker. "Viscosimetric, Hydrodynamic and Conformational Properties of Dendrimers." *Macromolecules*, 2001, 34, 8580-8585
2. Mackay, Michael E., **Tande, Brian M.**, Wagner, Norman J., Gido, Samuel P., Jeong, Miyoun, and Craig J. Hawker. "Microphase Separation of Hybrid Dendron-Linear Diblock Copolymers into Ordered Structures." *Macromolecules*, 2002, 35 (22), pp. 8391-8399.
3. **Tande, B.M.**, Wagner, Norman J., Dietcher, Robert, and Stanley I. Sandler. "UNIFAC-Free Volume Applied to Dendritic Molecules in Solution." *J. Chemical Engineering Data*. 2002, 47 (2), pp. 376-377.
4. **Tande, B.M.**, Wagner, Norman J., Mackay, Michael E. "Phase Behavior of Hybrid Dendron-Linear Copolymers and Blends with Linear Homopolymer." *Comptes Rendus Chimie*, 2003, 6 (8-10), pp. 853-864.
5. **Tande, B.M.**, Wagner, Norman J., and Young H. Kim. "Influence of End Groups on Dendrimer Rheology." *Macromolecules*, 2003, 36 (12), pp. 4619-4623.
6. **Tande, B.M.**, Wagner, Norman J., and Young H. Kim "Polypropyleneimine Dendrimers as Plasticizers for Polyvinyl Chloride" *Journal of Polymer Science B: Polymer Physics Edition*, 2007, 45, pp. 1970-1975.
7. Braegelmann, M.P., Azure, A.D, Stahl, D, **Kubátová, A, Seames, W.S., and Tande, B.M.** "Extraction of Fatty Acids from Noncatalytically Cracked Triacylglycerides using Aqueous Amines." *Separation Science and Technology*, 2011, 46 (14), pp. 2167-2173
8. Gandhi, S., Kadrmas, J., Šťávková, J. **Kubátová, A., Muggli, D., Seames, W.S., Sadrameli, M, and Tande, B.M.** "Extraction of Fatty Acids from Noncatalytically Cracked Triacylglycerides with Water and Aqueous Sodium Hydroxide", *Separation Science and Technology*, 2012, 47 (1), pp. 66-72
9. Fegade, S.L., Cho, H., **Tande, B.M., Seames, W.S.**, Sakodinskaya, I., Muggli, D., Kozliak, E. "The catalytic reforming of propylene over HZSM-5 to produce aromatic

- compounds: A design of experiments (DOE) approach.” 2012. *Chemical Engineering Communications*. 200 (8), pp. 1039-1056.
10. Rutala, W.A., Gergen, M.F., **Tande, B.M.**, Weber, D.J. “Rapid Hospital Room Decontamination Using UV Light with a Nanostructured UV-Reflective Wall Coating” *Infection Control and Hospital Epidemiology*, 2012 34 (5 SPL), pp. 527-529
 11. Wang, H., Kolodka, E., **Tande, B.M.** Thermomechanical and rheological studies of copolymers of methyl methacrylate with a series of linear vinyl esters (2013) *Industrial and Engineering Chemistry Research*, 52 (14), pp. 5111-5119.
 12. Dongari, N., Sauter, E.R., **Tande, B.M.**, Kubátová, A. Determination of Celecoxib in human plasma using liquid chromatography with high resolution time of flight-mass spectrometry (2014) *Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences*, 955-956 (1), pp. 86-92.
 13. Rutala, W.A., Weber, D.J., Gergen, M.F., **Tande, B.M.**, Sickbert-Bennett, E.E. Does coating all room surfaces with an ultraviolet C light-nanoreflective coating improve decontamination compared with coating only the walls? (2014) *Infection Control and Hospital Epidemiology*, 35 (3), pp. 323-325.
 14. Zhang, X., Seames, W.S., **Tande, B.M.** Recovery of CO₂ from Monoethanolamine using a Membrane Contactor (2014) *Separation Science and Technology (Philadelphia)*, 49 (1), pp. 1-11.
 15. Rutala, W.A., Gergen, M.F., **Tande, B.M.**, Weber, D.J. Room decontamination using an ultraviolet-C device with short ultraviolet exposure time (2014) *Infection Control and Hospital Epidemiology*, 35 (8), pp. 1070-1072.
 16. Jones, B., Linnen, M., **Tande, B.M.** Seames, W.S. A Renewable Process for the Production of Vinyl Acetate Monomer. (2015) *Processes*, 3(3), 619-633
 17. Fegade, S.; **Tande, B.M.**; Kubatova, A.; Seames, W.S.; Kozliak, E. A novel two-step process for the production of renewable aromatic hydrocarbons from triacylglycerides (2015) *Industrial & Engineering Chemistry Research* 54, 9657–9665
 18. Krishnamoorthy, G. and **Tande, B.M.** Improving the effectiveness of ultraviolet germicidal irradiation through reflective wall coatings: Experimental and modeling based assessments (2016) *Indoor and Built Environment*, 25(2) 314–328.
 19. Woock, T., Bjorgaard, S., **Tande, B.**, Alshami, A. Purification of natural gas using thermally rearranged polybenzoxazole and polyimide membranes – a review: part 2(2016) *Membrane Technology*, 2016 (10), pp. 7-12.
 20. Woock, T., Bjorgaard, S., **Tande, B.**, Alshami, A. Purification of natural gas using thermally rearranged polybenzoxazole and polyimide membranes – a review: part 1 (2016) *Membrane Technology*, 2016 (9), pp. 7-12.
 21. Seames, W. S., Khambete, M., Khatibi, N., Amsley-Benzie, S., Kozliak, E., Muggli, D., **Tande, B.M.** High Octane Gasoline Using Renewable Aromatic Hydrocarbons, *The Open Fuels & Energy Science Journal*, 2017, 10, 79-94
 22. **Tande, B.M.**, Pringle, T.A., Rutala, W.A., Gergen, M.F., Weber, D.J. Understanding the Effect of Ultraviolet Light Intensity on Disinfection Performance through the use of UV Measurements and Simulation, *Infection Control and Hospital Epidemiology*. 2018, 39 (9), 1122-1124
 23. Silvernagel, C., Langelett, G., and **Tande, B.** The new intellectual property race: Run, walk, or sit it out? *Entrepreneur perceptions of the America Invents Act Journal of Entrepreneurship and Public Policy* 2018, 7 (2), 106-116

24. Amsley-Benzie, S., Fegade, S., **Tande, B.**, Kubátová, A., Kozliak, E., Seames, W. An Initial Study of the Catalytic Reforming of Crop Oil-Derived 1-Alkenes with HZSM-5 to Aromatic Hydrocarbons *Journal of the American Oil Chemists' Society* 2018 95 (9), 1201-1211
25. Seames, W., Fegade, S., Sakodynskaya, I., Muggli, D., **Tande, B.**, Kubátová, A., Kozliak, E., The Aromatization of Propene Via Nano-Size HZSM-5. *American Journal of Applied Chemistry* 2018 6 (5), 175-188

PATENTS

1. **US 7520099** Pultruded Building Product and System (issued April 21, 2009)
2. **US 7966764** Decoy or fishing lure exhibiting realistic spectral reflectance (Issued June 28, 2011)
3. **US 8076504** Method for production of short chain carboxylic acids and esters from biomass and product of same (Issued December 13, 2011)
4. **US 8450541** Method for producing cyclic organic compounds from crop oils (Issued May 28, 2013)
5. **US 8528248** Method of creating animal metamers and compositions with surfaces which constitute animal metamers (Issued September 10, 2013)
6. **US 8650795** Coating for a decoy or fishing lure exhibiting realistic spectral reflectance (Issued Feb 18, 2014)
7. **US 9149033** Camouflage covering using compositions with surfaces which constitute animal metamers (Issued Oct 6, 2015)
8. **US 9273252** Production of aromatics from noncatalytically cracked fatty acid based oils (Issued March 1, 2016)
9. **US 9657177** UVC Reflective Coating (Issued May 23, 2017)
10. **US 9976038** UVC Reflective Coating (Issued May 22, 2018)