

JENNIFER JEWETT VANANTWERP

Calvin University • Engineering Department • 1726 Knollcrest Circle SE • Grand Rapids, MI 49546
jjvanant@calvin.edu • Phone: (616) 526-8581 • <https://orcid.org/0000-0003-1066-9202>

EDUCATION:

Ph.D., Chemical Engineering

1999

University of Illinois at Urbana-Champaign

Thesis: *Affinity Maturation of the D1.3 Antibody Using Yeast Surface Display and Flow Cytometry*

Advisor: Dr. K. Dane Wittrup

Graduate Teacher Certification

University of Illinois at Urbana-Champaign

M.S., Chemical Engineering

1997

University of Illinois at Urbana-Champaign

Thesis: *Thermodynamic Characterization of Affinity Maturation: Entropic Changes Exhibited in a Higher Affinity Mutant of the D1.3 Antibody*

Advisor: Dr. K. Dane Wittrup

B.S. Chemical Engineering, with high honor

1994

Michigan State University, East Lansing, MI

WORK EXPERIENCE:

Calvin University

Grand Rapids, Michigan

Professor, Engineering Department

2011-present

Associate Professor, Engineering Department

2006-2011

Assistant Professor, Engineering Department

1999-2006

- ENGR 101: Introduction to Engineering Design
- ENGR 102: Engineering Communications, Analysis, and Design
- ENGR 106/106L: Engineering Chemistry and Materials Science & Lab
- ENGR 209/209L: Introduction to Laws of Conservation and Thermodynamics & Lab
- ENGR 303/303L: Chemical Engineering Principles & Thermodynamics
- ENGR 319/319L: Introduction to Thermal/Fluid Sciences & Lab
- ENGR 335: Mass Transfer and Separations
- ENGR 337: Chemical Engineering Laboratory
- ENGR W82: Advanced Topics in Chemical Engineering
- IDIS 110: Research and Information Technology

Consulting

Grand Rapids, Michigan

Environmental Engineering

2007-2010

Quality assurance reviews; Preparation and review of grant applications for alternative energy projects (Fleis & VandenBrink Engineering, Inc., Grand Rapids, Michigan).

Chemical Engineering

2002-2003

Evaluate and implement new sampling system for pilot plant (Pfizer, Inc., Holland, Michigan). Supervise student research assistants.

Fleis & VandenBrink Engineering, Inc.

Professional Extern, Environmental Engineering

Develop wastewater treatment plant models with simulation software, and use to predict performance. Plan, construct, and implement pilot study for major expansion of trickling filter treatment system. Conduct quality assurance reviews.

Grand Rapids, Michigan

2006-2007

Pfizer, Inc.

Professional Intern, Chemical Development Group

- Feasibility study of biotransformations for synthesis of pharmaceuticals.

Holland, Michigan

Summer, 2000

University of Illinois

Research Assistant, Department of Chemical Engineering

- Research Area: Protein Engineering (for higher affinity antibodies)
- Techniques: Creation and screening of protein libraries for directed evolution of protein properties, Production and purification of proteins, Yeast surface display, Flow cytometry (fluorescence activated cell sorting), Isothermal titration calorimetry, Fluorescence spectroscopy, Molecular biology.
- Supervised four undergraduate students conducting biochemical engineering research related to my thesis.

Urbana, Illinois

1994-1999

University of Illinois

Teaching Assistant, Department of Chemical Engineering

- Introduction to Chemical Engineering (CHE 261), Chemical Engineering Thermodynamics (CHE 370), Chemical Engineering Laboratory (CHE 374), Special Topics - Biochemical Engineering (CHE 396).
- Outstanding Teaching Award, U. of Illinois College of Liberal Arts and Sciences, 1999
- University of Illinois List of Teachers Ranked as Excellent by their Students, 1997

Urbana, Illinois

1995-1997

Amway Corporation

Engineering Intern, Process Research and Development Dept.

- Tested the ULTRAMAX process optimization software by designing and conducting experiments, for both the pilot plant and production line, to increase the bulk density of powdered laundry detergent.
- Wrote a manual to aid effective use of the software for future process development.

Ada, Michigan

Summer 1993

IBM

Engineering Intern

- Designed and conducted experiments to improve the process for fabrication of lithography masks, including work in Class I Clean Room environment.

Burlington, Vermont

Summer 1992

Michigan State University

Undergraduate Research Assistant, Dept. of Chemical Engineering

- Conducted fluid dynamics experiments involving liquid-liquid hydrocyclone separations.
- Wrote protocols for lab techniques.

East Lansing, Michigan

1990-1992

BOOKS:

J.J VanAntwerp & D. Wilson (forthcoming, 2022). *A Reason for Hope: The Changing Face of Sexual Harassment in Engineering*. Cambridge Scholars Publisher.

PEER- REVIEWED PUBLICATIONS:

J.J VanAntwerp & D. Wilson (submitted, February 2021). What do they need? An Alternative Look at Retaining Women in Engineering. *IEEE Women in Engineering Magazine*.

J.J VanAntwerp & D. Wilson (submitted, January 2021). Left out: A review of women's struggle to develop a sense of belonging in engineering. *SAGE Open*.

J.J. VanAntwerp, D. Wilson, L. Summers, D. Maynen, J. Wright (2019). After #MeToo: What's next for women in the engineering workplace? *Proceedings of the 2019 American Society for Engineering Education (ASEE) Conference*, Tampa, FL, June, 2019.

D. Wilson, J.J. VanAntwerp, J. Wright, L. Summers (2019). Need satisfaction and need frustration among women and men faculty in engineering: A self-determination perspective. *Proceedings of the 2019 American Society for Engineering Education (ASEE) Conference*, Tampa, FL, June, 2019.

J.J. VanAntwerp & D. Wilson (2018). Differences in motivation patterns among early and mid-career engineers. *J. Women & Minorities in Science and Engineering*, **24**(3): 227-259.

J.J. VanAntwerp & D. Wilson (2015). Difference between engineering men and women: How and why they choose what they do during early career. *Proceedings of the 2015 American Society for Engineering Education (ASEE) Conference*, Seattle, WA, June, 2015. **Awarded "Best Paper" by the Women in Engineering Division of ASEE.**

J.J. VanAntwerp, C. Bruxvoort, M. Plett, D. Wilson (2011). Does Christian faith make a difference in motivating career decisions in engineering? *Proceedings of the 9th Christian Engineering Education Conference*, Vancouver, B.C., June, 2011. <http://tinyurl.com/2011CEEC-Proc>

M. Plett, C. Hawkinson, J.J. VanAntwerp, D. Wilson, C. Bruxvoort (2011). Engineering identity and the workplace persistence of women with engineering degrees. *Proceedings of the 2011 American Society for Engineering Education (ASEE) Conference*, Vancouver, B.C., June, 2011. <http://www.asee.org/public/conferences/1/papers/724/view>

D. Wilson, M. Plett, J.J. VanAntwerp, C. Bruxvoort (2011). Opportunities to serve: Important from middle school to retirement. *2011 WEPAN Annual Conference*, Seattle, WA, June, 2011.

J.J. VanAntwerp, R. Reed, C. Bruxvoort, N. Carlson (2008). Engineering student retention: Development of a validated, quantitative instrument for exploring the role of personal and institutional context. *Proceedings of the 2008 American Society for Engineering Education (ASEE) Conference*, Pittsburgh, PA, June, 2008.

J.J. VanAntwerp & G.E. Ermer (2006). Male and female He created them: Why Christians should care about educating more engineers and how to achieve it. *Proceedings of the 6th Christian Engineering Education Conference*, Bourbonnais, IL, June, 2006. <http://tinyurl.com/2006CEEC-Proc>

J.J. VanAntwerp (2006). The Christian foundations of an engineering education. *Proceedings of the 6th Christian Engineering Education Conference*, Bourbonnais, IL, June, 2006. <http://tinyurl.com/2006CEEC-Proc>

J.J. VanAntwerp, J. VanAntwerp, D.A. Vander Griend, W.W. Wentzheimer (2004). Chemistry and materials science for all engineering disciplines: A novel interdisciplinary team-teaching approach. *Proceedings of the 2004 American Society for Engineering Education (ASEE) Conference*, Salt Lake City, Utah, June, 2004.

W.W. Wentzheimer, G.E. Ermer, J.J. VanAntwerp, S.H. VanderLeest (2004). An optimal engineering education: The BSE at a Liberal Arts college. *Proceedings of the 2004 American Society for Engineering Education (ASEE) Conference*, Salt Lake City, Utah, June, 2004.

J.J. VanAntwerp & K.D. Wittrup (2000). Fine affinity discrimination by yeast surface display and flow cytometry. *Biotechnology Progress*, **16**: 31-37.

E.V. Shusta, J.J. VanAntwerp, and K.D. Wittrup (1999). Biosynthetic polypeptide libraries. *Current Opinion in Biotechnology*, **10**: 117-122.

J.J. VanAntwerp & K.D. Wittrup (1998). Thermodynamic characterization of affinity maturation: the D1.3 antibody and a higher affinity mutant. *Journal of Molecular Recognition*, **11**: 10-13.

OTHER PUBLICATIONS:

J.J. VanAntwerp (2006). A trickling filter pilot study for the introduction of new industrial wastewater to a municipal stream: work plan. Fleis & VandenBrink Engineering, Inc., internal document, November 2006.

P. Schonewill, E. Smith, J. VanAntwerp, J.J. VanAntwerp, B. VandenBosch, J. Vliem, W.W. Wentzheimer. Alternative sampling – Project summary and recommendations. November 2003.

J.J. VanAntwerp. Feasibility study of biotransformation for Gabapentin synthesis. Final Report for Internship, Pfizer Internal Document. August 9, 2000.

J.J. VanAntwerp. Regioselectivity during biotransformations for Gabapentin synthesis. Pfizer Internal Document. July 28, 2000.

J.J. VanAntwerp. Increasing yields from biotransformations for Gabapentin synthesis. Pfizer Internal Document. July 7, 2000.

PRESENTATIONS:

Invited lecture: Women in the engineering workforce, through the lens of motivation theory. Seminar series, Michigan State University, Department of Chemical Engineering and Materials Science. February, 2020.

Invited Panelist: After #MeToo: What's next for women in the engineering workplace? 2019 American Society for Engineering Education (ASEE) Conference, Tampa, FL, June, 2019.

R. Baker, J. Yonker, J.J. VanAntwerp. Equipping faculty to engage the theology of vocation with undergraduates. NetVUE Conference: Renewing the Theological Exploration of Vocation. Charlotte, NC, March 2017.

J.J. VanAntwerp, J. G. VanAntwerp. Keynote address. Calvin College Engineering Department 30th Anniversary West Coast Reunion Dinner, Seattle, WA, June 2015.

J.J. VanAntwerp. Motivational differences in early-career pathway choices of engineering graduates. Calvin College Engineering Department Seminar, October 2014.

J.J. VanAntwerp, C. Bruxvoort, M. Plett, D. Wilson. Examining calling as a motivator in career decisions: A comparison of engineering graduates from secular and Christian undergraduate institutions. Social Sciences Seminar Series, Calvin College, February 17, 2012.

Engineering student retention (**Panelist**). 2009 Christian Engineering Education Conference, Waco, TX, June 2009.

Engineering career paths: the role of faith and gender (**Panelist**). 2008 Christian Engineering Education Conference, Beaver Falls, PA, June, 2008.

J.J. VanAntwerp. Land of milk and water: Cleaning up our mess. Calvin College Engineering Department Seminar, November 2007.

J.J. VanAntwerp. Biotransformations: Let Bacteria Do the Dirty Work. Pfizer Chemical Development Group, Internal Presentation. August 9, 2000.

J.J. VanAntwerp and K.D. Wittrup: Osmotic stress and affinity maturation by yeast surface display. *American Institute of Chemical Engineers Annual Meeting*, Miami, FL, November 1998.

K.S. Midelfort, E.T. Boder, M.C. Kieke, E.V. Shusta, J.J. VanAntwerp, D.M. Kranz and K.D. Wittrup. Directed evolution of protein binding, stability, and expression properties by yeast surface display. *Molecular Interaction Technologies '98*, San Francisco, CA, October 1998 (poster).

J.J. VanAntwerp, E.T. Boder and K.D. Wittrup: Antibody engineering by yeast surface display. *216th American Chemical Society National Meeting*, Boston, MA, August 1998.

J.J. VanAntwerp and K.D. Wittrup: The role of osmotic stress in the affinity maturation of the D1.3 antibody by yeast surface display. *The Whitaker Foundation Annual Meeting*, La Jolla, CA, August 1998 (poster).

J.J. VanAntwerp and K.D. Wittrup: Thermodynamic characterization of affinity maturation: the D1.3 antibody and a higher affinity mutant. *11th Annual Gibbs Conference on Biothermodynamics*, Carbondale, IL, October 1997.

J.J. VanAntwerp and K.D. Wittrup: Thermodynamic characterization of antibody and higher mutant binding to antigen. *12th International Symposium on Affinity Interactions: Fundamentals and Applications of Biomolecular Recognition*, Kalmar, Sweden, June 1997 (poster).

J.J. VanAntwerp and K.D. Wittrup: Thermodynamic characterization of the D1.3 antibody and a mutant: the role of bound water molecules. *American Institute of Chemical Engineers Annual Meeting*, Chicago, IL, November 1996 (poster).

GRANTS:

J.J. VanAntwerp (2022) *Large-scale Study of Engineering Workforce Retention*. Calvin College Sabbatical Leave. Amount awarded: one academic semester of leave at 60% FTE.

J.J. VanAntwerp (2021). *Women in the Engineering Workplace*. Calvin University Research Fellowship. Amount awarded: Release time for Interim semester.

W. Lee, M. Lundberg, J.J. VanAntwerp, D. Rienstra, M. Walhout (2015-16). *Faith and Vocation: A Faculty Development Workshop*. Council of Independent Colleges Network for Vocation in Undergraduate Education (NetVUE) Professional Development Grant. Amount awarded: \$10,000.

J.J. VanAntwerp (2013-2014). *Workplace Persistence of Women Engineers*. Calvin College Sabbatical Leave. Amount awarded: one academic year of leave at 30% FTE.

J. J. VanAntwerp (2009-2010). *Career Pathways of Degreed Engineers*. Calvin College Research Fellowship. Amount awarded: Release time equivalent to one course.

D. Dornbos, J.J VanAntwerp, W. Wentzheimer (2009). *Technical and economic efficacy of woody invasive species for conversion to fuel ethanol*. ISRI Student Research Grant. Amount awarded: Stipends and supplies to support two student researchers and two faculty mentors for 15 months.

J.J. VanAntwerp, M.I. Plett, C. Bruxvoort, D. Wilson (2009). *Career Pathways of Women Engineers: The Role of Faith and Person*. Calvin Center for Christian Scholarship Small Grant. Amount awarded: \$1,500.

J.J. VanAntwerp, C. Bruxvoort, R. Reed (2007-2008). *Engineering Student Retention in a Non-PhD-Granting 4-year College*. Calvin College Research Fellowship. Amount awarded: Release time equivalent to two courses.

J.J. VanAntwerp (2006). *A Professional Externship in Environmental Engineering*. Calvin College Sabbatical Leave. Amount awarded: one semester and one interim of full-time leave.

J.J. VanAntwerp, C. Bruxvoort, R. Reed (2006). *Engineering Student Retention in a Non-PhD-Granting 4-year College*. Calvin Center for Social Research Small Grants Program. Amount awarded: \$1,000 in-kind support.

J.J. VanAntwerp (2006). *Conducting Rigorous Research in Engineering Education*. National Science Foundation CCLI-ND (DUE - 0341127 and HRD - 0411994). Amount awarded: Expenses to attend one-week workshop plus \$3,000.

J. VanAntwerp, J.J. VanAntwerp, W.W. Wentzheimer (2001). *Alternative sampling methods/sites for pilot plant scale reactors*. Chemical Development, Pfizer Inc. (Holland, MI). Amount awarded: \$99,600.

PROFESSIONAL DEVELOPMENT ACTIVITIES:

Teaching Development and Pedagogy

- American Society for Engineering Education Annual Meeting: 2004, 2006, 2008, 2009, 2011, 2015, 2019
- POGIL (Process-Oriented, Guided-Inquiry Learning) Workshop, Calvin College, May 2017
- Christian Engineering Education Conference: 2004, 2006, 2008, 2009, 2011, 2015
- Exceed Teaching Workshop, American Society of Mechanical Engineers, Santa Clara, CA, 2004
- Graduate Teaching Certification, Univ. of Illinois Office of Instructional Resources, 1999
- Instructor for University of Illinois All-Campus Teaching Assistant Orientation, 1998
- "Effective Teaching: A Workshop," taught by R. Felder and R. Brent, and sponsored by the Academy for Excellence in Engineering Education at the University of Illinois, 1998
- Completed one-semester course, University of Illinois Dept. of Educational Organization and Leadership, "Teaching in the College and University Setting," 1995

Research and Professional Activities

- The Council of Independent Colleges Network for Vocation in Undergraduate Education (NetVUE) National Conference: 2015, 2017
- Served as Senior Faculty Divisional Leader, "Faith and Vocation" Faculty Development Workshop, 2015-16 NetVUE Professional Development grant

- “Qualitative Research Methods” Workshop, taught by Michael Emerson, Rice University and sponsored by the Calvin College Dean for the Social Sciences and Contextual Disciplines, Grand Rapids, MI, June 6-10, 2011
- “Conducting Rigorous Research in Engineering Education” workshop, National Science Foundation CCLI-ND, Golden, CO, 2006
- American Institute of Chemical Engineers Annual Meeting: 1996, 1998, 2002, 2005
- Symposium on Synthetic Organic Chemistry, Hope College, Holland, MI, 2000

Other Professional Development

- “Christians and Cultural Difference,” Workshop, Calvin University Office of Diversity & Inclusion, March 2020.
- *Emerging Adulthood and Faith* (Jonathan Hill) Book Discussion, Calvin University, October 2018.
- “Implicit Bias in the Search Process,” Workshop, Calvin College Human Resources, October 2018.
- “Inclusive Excellence,” Workshop, Calvin College Office of Diversity & Inclusion, September 2018.
- “Microaggressions” workshop sponsored by the Calvin College Multicultural Affairs Office, Fall 2014 (FEN)
- “Intercultural Communication” Workshop at the Calvin College Anti-Racism Conference, March 5, 2012 (FEN)
- J. Pieper Reading Group with the Dean of the Chapel, Calvin College, MI, 2003
- “How a Reformed Christian Perspective Can Inform Biotechnology and Biotechnology-Related Policy,” Working Group, Calvin Center for Christian Scholarship, 2001-2002

PROFESSIONAL SERVICE:

- External Reviewer for assessment of Mechanical Engineering Master of Science degree program, California Baptist University (2019).
- Reviewer for:
 - *International Journal of Gender, Science, & Technology*: 2021.
 - American Society for Engineering Education Conference: 2005-2021.
 - Christian Engineering Education Conference: 2004, 2006, 2008, 2009, 2011, 2015
 - Advanced Placement Course Development in Engineering: 2015
 - Textbook (*Emergence and Evolution of Novel Designs*): Wiley, 2004
- Treasurer, Women in Engineering Division, American Society for Engineering Education, 2006 – 2009
- “Careers in Chemical Engineering” visits to high school classes, 2000-2002
- Calvin College “Engineering Explorations” program for middle school students, 2003

INSTITUTIONAL SERVICE:

Calvin University Governance Committees:

- Workplace Quality Taskforce, 2017 – present
- *Ad hoc* Faculty Workload Committee, 2017 – 2018
- *Ad hoc* Faculty Compensation Committee, 2016 – 2017
- Faculty Senator, Natural Sciences & Math Divisional Representative, 2008-2011 & 2014-2017.
- Student Discipline Appellate Board, 2010 – 2013 (Convener, 2011 – 2013)
- Student Life Committee, 2003-2006; 2007-2009 (Chair, 2008-2009)
- Student Discipline Committee, 2000-2003

Engineering Departmental Service:

- Engineering Department Personnel Committee, 2009 – present (Chair, 2015 – 2020)
- Engineering Department Advisor to Women in Engineering Student Intern, 2011 – 2015
- Keynote Address, Calvin College Engineering Department 30th Anniversary Dinner, Seattle, WA, 2015
- Faculty Advisor to Society of Women Engineers and Calvin Women Scientists students organizations, 2001-2002; 2005 – 2011
- Engineering Department Subcommittee for review of Mission Statement, Fall 2010
- Engineering Department Promotions Committee, 2008 – 2010
- Mentor to new faculty, 2007-2010, 2020-2021
- Mentor for Calvin College Discovery Club Fellowship Pre-college program, 2005
- Engineering Department Seminar Coordinator, 2004-2005
- Engineering Department Meetings – Recorder of Minutes, 2003-2004

Other University Service:

- Academic Advisor for approximately 25 undergraduate engineering students each year
- Academic Advisor for NSF-grant-sponsored S-STEM project, to improve retention of at-risk students in STEM departments (approximately 5 students each year)
- Mentor, Calvin College Student Mentoring Program, 2000-2003; 2017-2019
- Campus Coordinator, NetVUE (Network for Vocation in Undergraduate Education), 2014 – 2017
- Co-Leader, Campus-wide Bible study 2011 (Psalms); 2014 (James); 2016 (Revelation); 2017 (Old Testament)
- Faculty Interviewer, Calvin Research Fellows Program, 2017
- Guest speaker on Teaching & Faith Integration, New Faculty Orientation, 2016
- Speaker, Calvin College Chapel: 1999, 2007
- Facilitator, Discussion groups at Calvin College preceding Equality Riders visit, 2006
- Instructor, Calvin Academy for Lifelong Learning (CALL) Class, 2005

COMMUNITY SERVICE:

- Seymour Christian Reformed Church
 - Shepherding Elder, 2020-2023
 - Clerk of Council & Administrative Board Elder, 2010-2013
 - Chair, Worship Committee, 2008 – 2013
- Science Olympiad coach, Ada Christian Middle School Team, 2013

AWARDS:

- **Best Paper** of the Women in Engineering Division, American Society for Engineering Education Annual Meeting, 2015
- Whitaker Foundation **Graduate Fellowship** in Biomedical Engineering, 1995-1999
- **Outstanding Teaching Award**, U. of Illinois College of Liberal Arts and Sciences, 1999
- University of Illinois **List of Teachers Ranked as Excellent by their Students**, 1997
- National Defense Science and Engineering **Graduate Fellowship**, 1994-1995
- National Science Foundation **Graduate Research Fellowship**, 1994
- The Honor Society of Phi Kappa Phi - National **Graduate Fellowship**, 1994-1995
- American Institute of Chemical Engineers (AIChE) **National Student Design Competition**, Honorable Mention Award, 1994