

1. **Name:** Patricia Ann Relue
2. **Education – degrees, discipline, institution, year:**
 - Ph.D. in Chemical Engineering, University of Michigan, May 1990 - Feb. 1994
 - M.S. in Engineering, University of Michigan, Aug. 1988 - May 1990
 - B.S. in Chemical Engineering, Magna Cum Laude, with Honors, Univ. of Toledo, 1984 - 1988.
3. **Academic Experience - 26 years**
 - Associate Dean of Research and Graduate Studies, College of Engineering, Feb. 2018 – present
 - Associate Dean of Research, College of Engineering, July 2017 – Feb. 2018
 - Undergraduate Program Director, Department of Bioengineering, July 2014 – July 2017; Aug 2000 – May 2001; May 1999 – Nov 1999
 - Professor, Department of Bioengineering, April 2014 – present
 - Graduate Program Director, Bioengineering, 2002-2010.
 - Visiting Assoc. Professor, NJIT, Dept. of Elec. & Computer Engineering, 2001 (sabbatical leave).
 - Associate Professor, Department of Bioengineering, 1999 – 2014.
 - Assistant Professor, Dept of Bioengineering, 1996 – 1999.
 - Assistant Professor, Dept of Chemical Engineering, University of Toledo, 1993 – 1999.
 - Adjunct Assistant Professor, Dept. of Pathology, Medical College of Ohio, Mar 1995 – 2003
4. **Non-academic experience:**
 - Isaac Corporation, Consultant, Defiance, Ohio, June 1995 - Jan. 1996.
 - Ford Motor Company, Instructor, Creative Problem Solving, Avon Lake, Ohio, Aug. 1994.
5. **Certifications or professional registrations:** N/A
6. **Current membership in professional organizations:**
 - Society for Industrial Microbiology (SIM); American Institute of Chemical Engineers (AIChE); American Society of Engineering Education (ASEE); Biomedical Engineering Society (BMES)
7. **Honors and Awards:**
 - Alice H. Skeens Outstanding Woman Award*, University Women's Commission, The University of Toledo, 2015
 - Outstanding Professor in BIOE*, BMES Student Chapter, UT, 1996-97; 2005-06; 2009-10
 - Outstanding Teacher Award*, College of Engineering, UT, 2007
 - Dean's Merit Award*, College of Engineering, UT, 1998
 - Sigma Xi*, UT, 1997 - present
 - UT Outstanding Teacher Award*, UT, 1997
8. **Service Activities (most important within and outside of the institution)**
 - Chaired Conference Sessions:**
 - 2014 36th Symposium on Biotechnology for Fuels and Chemicals (Society for Industrial Microbiology), Co-Chair: Bioprocessing, Reactor Design, and Separations Technology I, Clearwater Beach, FL
 - 1999 AIChE National Meeting, Co-Chair: Tissue Engineering, Dallas, TX.
 - 1998 AIChE National Meeting, Co-Chair: Cell Adhesion and Migration, Miami Beach, FL.
 - 1997 AIChE National Meeting, Co-Chair: Emerging Issues in BIOE Education, LA, CA.
 - 1996 AIChE National Meeting, Co-Chair: Receptor-Mediated Cell Phenomena, Chicago, IL.
 - University, College, and Department:**
 - UT/UM NSF I-Corps – Program coordinator; Faculty, Mentor and Teaching Team recruiter – Fall 2014/Spring 2015

UT Research Council, 2013- present.

UT Graduate Council, May 2005 – May 2014; Jan 2017 – present;

chair – May 2008-09; executive committee, May 2008 – May 2013;

curriculum committee - May 2006-08, Aug 2010 – Aug 2017;

curriculum committee chair - May 2006-08, Aug 2010 – May 2012, Oct 2015 – Aug 2017.

UT Outstanding Teacher Award selection committee, 2009, 2010, 2011.

UT Faculty Senate, 2007-2008; 2001 – present

Academic Affairs Committee 2007-08; 2013-2015;

Academic Programs Committee, 2013 – present;

Committee on Committees 2009, 2013; 2014

Faculty Affairs Committee, 2012-13;

Student Affairs Committee, 2012-13.

UT Radiation Safety Committee, 1998 – 2003; chair, 1998 – 2001

University Committee on Sabbaticals, 2010 - 2017; Chair 2011-12; 2013-14; 2014-15, 2015-16

Biomedical Engineering PhD Program Administrative Committee, 2007 – present;

Qualifying Examination (QE) Committee 2007-2017

QE Chair, 2008, 2012, 2013, 2014, 2015, 2016

College of Engineering Diversity Committee, 2016-2017

College of Engineering Dean's Advisory Council, 2000 – 2003

BIOE Department Personnel Committee, 1999 – present; Chair 2006-07; 2014-2017.

Phi Sigma Rho Faculty Advisor, 1999 – 2014

9. Most important publications/patents/presentations:

Refereed Journal Articles (since 2011):

D. Yuan, K. Rao, **P. Relue**, and S. Varanasi, "Fermentation of biomass sugars to ethanol using native industrial yeast strains," *Bioresource Technology*, 102 (2011) 3246–3253.

B. Li, S. Varanasi and **P. Relue**. "New strategies based on aldose-ketose transformation for separation and/or chemical conversion of C6 and C5 sugars from lignocellulosic biomass hydrolyzate". *US Utility Patent filed*, April 2010.

S. Varanasi, K. Rao, and **P. Relue**, "A Novel technique that enables efficient fermentation of xylose and hexose sugars from biomass hydrolysates using native non-GMO yeasts," *US Utility Patent filed*, January 2, 2009.

K. Rao; S. Chelikani; **P. Relue**; and. S. Varanasi, "A Novel technique for Optimizing the Simultaneous-Isomerization-and-Fermentation (SIF) Approach of Converting Xylose to Ethanol," *Applied Biochemistry and Biotechnology*, 146(1-3):101-117, 2008.

Y. Yuan and **P. Relue**, "Enzymatic degradation of human skin dermis revealed by fluorescence and reflectance spectroscopy," *Optics Express*, 16(13):9857-9868, June 20, 2008.

"Using Endogenous Polarization-Sensitive Fluorescence to Monitor Metabolic Changes in Living Cells," Y. Yuan, **P.A. Relue**, and B.D. Cameron, *US utility patent filed* 2007.

Y. Yuan, Y. Li, B.D. Cameron, and **P.A. Relue**, "Fluorescence anisotropy of cellular NADH as a tool to study different metabolic properties of human melanocytes and melanoma cells," *IEEE Journal of Selected Topics in Quantum Electronics*, 13(6, pt 1):1671-1679, 2007.

Patents:

- S. Varanasi, K. Rao, **P. Relue**, and D. Yuan, "System for Simultaneous Isomerization and Fermentation of Sugars," *divisional patent*, US. Pat. No. **9,856,445 B2** issued January 2, 2018.
- S. Alipour, B. Li, S. Varanasi, **P. Relue**, and S. Viamajala, "Methods for high yield production of furans from biomass sugars at mild operating conditions," US Pat No. **9,828,615**, issued November 28, 2017.
- S. Alipour, B. Li, S. Varanasi, **P. Relue**, and S. Viamajala, "High yield production of furans from biomass sugars," *divisional application*, filed November 27, 2017.
- S. Varanasi, K. Rao, **P. Relue**, and D. Yuan, "System for Simultaneous Isomerization and Fermentation of Sugars," US Doc ID 20130330800 A1, US. Pat. No. **9,528,104 B2** issued December 27, 2016.
- S. Varanasi, **P. Relue**, B. Li, "Aldose-ketose transformation for separation and/or chemical conversion of C6 and C5 sugars from biomass materials," US Doc ID 20130074397 A1, US Pat. No. **9,242,222**, issued January 26, 2016.
- H. Shao, A. Vadlamani, S. Viamajala, S. Varanasi, and **P. Relue**, "Enzymatic digestion of microalgal biomass for lipid, sugar and protein recovery," US patent application 14/913896, US Doc ID 20160222421, published August 4, 2016.
- S. Varanasi, **P. Relue**, B. Li, "Aldose-ketose transformation for separation and/or chemical conversion of C6 and C5 sugars from biomass materials," US Appl No. 14/969899, US Doc ID 20160096857, *divisional application*, April 7, 2016
- S. Varanasi, K. Rao, **P. Relue**, and D. Yuan, "Methods of fermentation of xylose and hexose sugars," US Doc ID 20100285552, US Pat No. **8,507,232**, issued August 13, 2013.
- Y. Yuan, **P.A. Relue**, and B.D. Cameron, "Method to Monitor Metabolic Changes in Living Cells Using Endogenous Polarization-Sensitive Fluorescence," U.S. Provisional Patent Application Serial No. 60/843,183 filed Sept. 8, 2006; US Ser. No. 11/899,675 filed Sept. 6, 2007.
- Conference presentations and posters – last 4 years: (FIRST AUTHOR IS PRESENTER)**
- R. Gogar, S. Viamajala, **P. Relue**, and S. Varanasi, "Production of 2,5-Furan Dicarboxylic Acid (FDCA) in Ionic Liquid Media," Paper 726e, November 1, 2018, Pittsburgh, PA.
- R. Gogar, S. Viamajala, **P. Relue**, and S. Varanasi, "Furan Production from Biomass Hydrolysates: Scale-up of a Novel, High-Yield "SIRE" Process," Paper 411a, October 30, 2018, Pittsburgh, PA.
- R. Gogar, S. Viamajala, **P. Relue**, and S. Varanasi, "Techno-Economic Analysis (TEA) of a Novel Hybrid Enzyme- and Chemo-Catalytic Process for Producing Furans from Biomass Hydrolysate," paper 668b, November 2, 2017, Minneapolis, MN.
- R. Gogar, S. Viamajala, **P. Relue**, and S. Varanasi, "A Novel Method of Producing Levulinic Acid at High Concentrations and Yields from Corn Stover Hydrolysate," paper 700e, November 2, 2017, Minneapolis, MN.
- P. Zhang, S. Varanasi, and **P. Relue**, "Simultaneous Isomerization and Reactive Extraction Followed By Back Extraction of Sugars from Biomass Hydrolysate for High Purity and Yield of Ketose Sugars," paper 663f, November 2, 2017, Minneapolis, MN.
- J. Schreur, R. Gogar, S. Varanasi, and **P. Relue**, "Large-Scale Implementation of a New Technique for Sugar Extraction and Conversion to Furans from Biomass Hydrolysates," AIChE Annual Meeting, poster 490e, November 1, 2017, Minneapolis, MN.
- P. Zhang, S. Varanasi, and **P. Relue**, "Simultaneous isomerization and reactive extraction followed by back extraction of sugars from biomass hydrolysate for high purity and yield of

xylulose,” ACS 21st Annual Green Chemistry and Engineering Conference, Reston, VA, June 13-15, 2017.

- P. Zhang, S. Varanasi, and **P. Relue**, “New route of lignocellulosic biomass sugars fermentation to ethanol by native *Saccharomyces cerevisiae*,” 8th Annual Midwest Graduate Research Symposium, March 25, 2017.
- P. Zhang, S. Varanasi and **P. Relue**, “Isolation of Ketose Sugars from Mixed Sugar Solutions Using Simultaneous-Isomerization-and-Reactive-Extraction (SIRE), Followed by Back-Extraction (BE)” 38th Symposium of Biotechnology for Fuels and Chemicals, Poster M21, April 25-28, 2016, Baltimore, MD.
- R. Gogar, S. Viamajala, **P. Relue**, S. Varanasi, “Sustainable production of HMF from biomass hydrolysates,” Abstract ID: 2488486, ACS 20th Annual Green Chemistry & Engineering Conference, Portland, Oregon, June 14-16, 2016.
- R. Gogar, S. Varanasi, **P. Relue**, “High yield production of furans from biomass hydrolysates using a hybrid enzyme and chemocatalytic technology,” 2016 NSF SBIR/STTR Phase II Grantee Conference, June 5-8, Atlanta, GA.
- S. Alipour, R. Beeson, S. Varanasi, **P. Relue** and S. Viamajala, “High-Yield Conversion of Glucose to 5-Hydroxymethylfurfural (HMF) Under Mild Reaction Conditions,” AIChE Annual Meeting, paper 431332, November 8-13, 2015, Salt Lake City, UT.
- P. Relue**, S. Varanasi, and S. Viamajala, “High yield production of furans from biomass hydrolysates using a hybrid enzyme- and chemo-catalytic technology,” Center for the Sustainable Use of Greenhouse Gases, Industry Planning Conference, June 24-25, 2015.
- K. Marbaugh, S. Varanasi, **P. Relue**, and S. Viamajala, “High yield production of furans from biomass hydrolysates using a hybrid enzyme- and chemo-catalytic technology,” November 4, 2014, Poster, Center for the Sustainable Use of Greenhouse Gases, Industry Planning Conference, June 24-25, 2015.
- S. Varanasi, S. Alipour, S. Viamajala, and **P. Relue**, “High yield production of furans from biomass hydrolysates using a hybrid enzyme- and chemo-catalytic technology,” AIChE Annual Meeting, paper 388355, November 16-21, 2014, Atlanta, GA.
- P. Relue**, S. Varanasi, and S. Viamajala, “High yield production of furans from biomass hydrolysates using a hybrid enzyme- and chemo-catalytic technology,” November 4, 2014, Presentation, Center for the Sustainable Use of Greenhouse Gases Symposium, Ohio State University, Columbus, OH.
- K. Marbaugh, S. Varanasi, **P. Relue**, and S. Viamajala, “High yield production of furans from biomass hydrolysates using a hybrid enzyme- and chemo-catalytic technology,” November 4, 2014, Poster, Center for the Sustainable Use of Greenhouse Gases Symposium, Ohio State University, Columbus, OH.
- K. Marbaugh, B. Li, S. Varanasi, and **P. Relue**, “Xylulose to furfural: a mathematical modeling assessment of a new route to produce a high yield of furan,” 36th Symposium of Biotechnology for Fuels and Chemicals, Paper 4.04, April 28-May 1, 2014, Clearwater Beach, FL.
- K. Marbaugh, B. Li, S. Varanasi, and **P. Relue**, “Xylulose to furfural: a mathematical modeling assessment of reaction kinetics for dehydration,” 36th Symposium of Biotechnology for Fuels and Chemicals, Poster, April 28-May 1, 2014, Clearwater Beach, FL.

P. Zhang, H. Shao, S. Varanasi, S. Viamajala and **P. Relue**, "Algae Fermentation to 2,3-Butanediol by *Enterobacter cloacae*," 36th Symposium of Biotechnology for Fuels and Chemicals, Poster, April 28-May 1, 2014, Clearwater Beach, FL.

P. Zhang, B. Li, S. Varanasi, and **P. Relue**, "New route of lignocellulosic biomass sugars fermentation to ethanol by native *Saccharomyces cerevisiae*" 36th Symposium of Biotechnology for Fuels and Chemicals, Poster, April 28-May 1, 2014, Clearwater Beach, FL.

10. Professional development activities in the last five years:

Attended and/or presented at professional conferences:

March 11-13, 2019 -----ASEE Engineering Research Council, West Arlington, VA

June 4-5, 2018 -----Advancing University Engineering and Manufacturing Education Workshop, Washington, DC

March 12-14, 2018 -----ASEE Engineering Research Council, West Arlington, VA

Oct. 29 – Nov. 3, 2017 ---AIChE National Meeting, Minneapolis, MN

Oct. 17, 2017-----Ohio Defense Forum, Columbus, OH

Oct 16, 2017-----Chicago Conference for Associate Deans of Research at Small and Mid-Sized Engineering Schools, UI at Chicago, Chicago, IL

Mar 2-6, 2016-----VentureWell OPEN Conference, Portland, OR

July 22-23, 2015-----Midwest Engineering & Entrepreneurship Network, Purdue University, Lafayette, IN

Apr 28-May 1, 2014 -----36th Symposium of Biotechnology for Fuels and Chemicals, Clearwater Beach, FL

Apr 29 – May 2, 2013 ----35th Symposium on Biotechnology for Fuels & Chemicals, Portland, OR