BERNARDO YAÑEZ SOTO

CONACYT - Institute of Physics
Autonomous University of San Luis Potosi, SLP, Mexico
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EDUCATION

University of Wisconsin-Madison, Madison, WI
Ph. D. in Chemical and Biological Engineering **Sep 2007 – December 2012**
Dissertation: "Development of hydrogels as cell substrates with biomimetic characteristics"
Advisor: Paul F. Nealey

University of Northampton
Master in Leather Science and Technology **Sep 1998 – Sep 1999**
Thesis: "Thermodynamic study of leather drying using differential scanning calorimeter"
Advisor: Dante Davighi
Graduated with Honors

Universidad Nacional Autónoma de México
B. S. in Chemical Engineering **Oct 1992 – Jun 2007**
Thesis: "Volumetric study of denaturation of Lysozyme with Urea and Guanidine Hydrochloride"
Advisor: Miguel A. Costas-Basin
Graduated Summa cum Laude

RESEARCH EXPERIENCE

Universidad Autónoma de San Luis Potosí, SLP, Mexico
CONACyT Research Fellow **Oct 2014 – Present**
Surface bioengineering/soft matter

- Functionalization of cell surfaces
- Development of methods for evaluation of biological surface characteristics
- Evaporation inhibition by biological lipids
- Surface rheology of biological lipids

Responsible of the National Laboratory of Engineering of Matter Out-of-Equilibrium (LANIMFE)

- Coordination of external funding
- Strategic planning
- Quality Management System (ISO 9000)
- Management of services offered to academia and industry

University of California Davis, Davis CA
Research Associate **Jan 2013 – September 2014**
Engineering of biological surfaces to develop novel therapeutics

- Compiled the current knowledge of interfacial phenomena in the ocular surface
- Developed an *in vitro* model to evaluate surface properties
- Evaluation of different options of topical therapeutics to improve tear retention

University of Wisconsin-Madison, Madison, WI
Research Assistant **Sept 2007 – December 2012**
Engineered hydrogels as biomimetic substrates to direct cell behavior

- Developed systems to impart nano- and microscale topography to hydrogel substrates
- Created experimental techniques to determine wound healing capabilities of substrates
- Elucidated mechanisms to isolate the influence of topography on cell behavior by using substrates with uniform and controlled chemistry

Universidad Nacional Autónoma de México **September 1995 – April 1997**
Undergraduate Research Assistant
Elucidated unfolding mechanisms during the chemical denaturation of proteins

TEACHING AND ADVISING EXPERIENCE

Universidad Autónoma de San Luis Potosí, México
"Physical Chemistry for life sciences" **Spring 2018-2021**
Taught theoretical graduate course. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"Graduate Course in Bioengineering" **Spring 2018, Spring 2020**
Taught theoretical graduate course. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"Graduate Course in Biostatistics" **Fall 2017-2020, Spring 2022**
Taught theoretical graduate course. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"Applied Probability" **Fall 2017, Fall 2019-2021**
Taught theoretical undergraduate course. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"Materials Chemistry" **Fall 2016**
Taught theoretical graduate course. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"Fundamentals of Chemistry" **Fall 2016, Spring 2017**
Taught theoretical course undergraduate. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"General Chemistry" **Summer 2016, Summer 2017**
Taught preparatory course for applicants to the Graduate Program in Interdisciplinary Sciences.
Conducted discussion and developed sample problems

Universidad Autónoma de San Luis Potosí, México
"Linear algebra" **Spring 2016**
Taught theoretical undergraduate course. Conducted discussion and developed sample problems and exams

Universidad Autónoma de San Luis Potosí, México
"Multivariate Statistics" **Spring 2015**
Taught theoretical undergraduate course. Conducted discussion of statistical techniques

Universidad de Sonora, Hermosillo, Sonora, México
"Introduction to Tissue Engineering" **December 2014**
XV National School of Molecular Biophysics short course
Developed and present an introductory short course on tissue engineering for undergraduate level

University of Wisconsin-Madison, Madison, WI
Teaching Assistant – "Advanced Thermodynamics" **Fall 2010, Fall 2011**
Provided advice to student on graduate level, and developed sample problems for the understanding of critical thermodynamics concepts

Teaching Assistant – "Thermodynamics of Mixtures" **Fall 2009**
Assisted undergraduate students and administered grades. Conducted discussion on thermodynamic topics

Teaching Assistant – "Chemical Process Thermodynamics" **Fall 2008**
Assisted undergraduate students and administered grades. Conducted discussion on thermodynamic topics

Universidad Latina
"Algebra" and "Calculus I" **2006-2007**
Taught theoretical courses on undergraduate level math for Economics students

Universidad Nacional Autonoma de Mexico
Teaching Assistant– "Mass and energy balances / Thermodynamic properties / Phase Equilibrium/ Thermodynamics / Thermodynamics lab" **1994 - 1996**
Taught theoretical and experimental courses on undergraduate level thermodynamics and created experimental modules to enhance learning experience

WORK EXPERIENCE

Curtidos Temola, MEXICO
Technical Director **September 1999 – August 2007**
Research and development of leather products, optimization of manufacturing processes, problem solving, quality assurance, technical service

- Managed the team that developed hundreds of new products each year
- Achieved a reduction of sample production time from 3 weeks to 7 days
- Refurbished, redesign and set-up lab for quality assurance
- Conceived the system and procedures for the control of the waste-water treatment plant
- Optimized processes and reduced production costs by an average of 1% each year
- Solved problems in manufacturing areas
- Developed a simulator to predict parameters for leather drying
- Resolved most complaints and provided technical advice to customers
- Negotiated discounts and consignment storage schemes with suppliers of chemical products
- Mediated personnel conflicts
- Participated intensely in the strategic planning of the corporation

Quality coordinator **May 1997 – August 1998**
Coordination of working teams to develop a robust quality management system

- Designed quality management system
- Developed quality-oriented training material for personnel
- Organized quality-oriented team meetings
- Documented key processes in the sales, R&D and production departments
- Accomplished ISO 9000 certification

PUBLICATIONS AND PAPERS

Meza JM, Vélez-Cordero JR, Saito AR, Aranda-Espinoza S, Arauz-Lara JL, **Yáñez-Soto B**. Particle/wall electroviscous effects at the micron scale: comparison between experiments, analytical and numerical models. Journal of Physics: Condensed Matter. 2021 Dec 13;34(9):094001.

García-González DO**, Yánez-Soto B**, Dibildox-Alvarado E, de Jesús Ornelas-Paz J, Pérez-Martínez JD. The effect of interfacial interactions on the rheology of water in oil emulsions oleogelled by candelilla wax and saturated triacylglycerols. LWT. 2021 Jul 1;146:111405.

Hernández-Meza JM, Vélez-Cordero JR**, Yáñez-Soto B**, Ramírez-Saito A, Aranda-Espinoza S, Arauz-Lara JL. Interaction of colloidal particles with biologically relevant complex surfaces. Colloids and Surfaces A: Physicochemical and Engineering Aspects. 2019 Nov 5;580:123778**.**

Montes-Rojas A, Rentería JA, Chávez NB, Ávila-Rodríguez JG, **Yáñez-Soto B**. Increase in chloride retention using anion exchange membranes electrochemically impregnated with polyaniline/sodium polystyrene sulfonate composite deposits. New Journal of Chemistry. 2017;41(13):5863-74.

Mata-Cruz I, Vargas-Caamal A, **Yañez-Soto B**, López-Valdivieso A, Merino G, Quintana M (2017). Mimicking rose petal wettability by chemical modification of graphene films. Carbon 121, 472-478

Raghunathan VK, Thomasy SM, Strøm P, **Yañez-Soto B**, Garland SP, Sermeno J, Reilly CM, Murphy CJ. Tissue and cellular biomechanics during corneal wound injury and repair. Acta biomaterialia. 2017 Aug 1;58:291-301.

Montes-Rojas A, Rentería JA, Chávez NB, Ávila-Rodríguez JG, **Yañez-Soto B**. (2017) Influence of anion hydration status on selective properties of a commercial anion exchange membrane electrochemically impregnated with polyaniline deposits. RSC Advances. 7(41):25208-19.

Waldo-Mendoza MA, Quiñones-Jurado ZV, Pérez-Medina JC, **Yañez-Soto B**, Ramírez-González PE (2017). Fogging control on LDPE/EVA coextruded films: Wettability behavior and its correlation with electric performance. Membranes 7(1),11

Leonard BC, **Yanez-Soto B**, Raghunathan VK, Abbott NL, Murphy CJ (2016). Species variation and spatial differences in mucin expression from corneal epithelial cells. Experimental Eye Research. 152, 43-48

Vélez-Cordero J, **Yanez-Soto B**, Arauz-Lara JL (2016). Transport of colloids along corners: visualization of evaporation induced flows beyond the axisymmetric condition. Langmuir. 32(32), 8171-8181.

Yanez-Soto B, Leonard BC, Raghunathan VK, Abbott NL, Murphy CJ (2015). Effect of stratification on the surface properties of corneal epithelial cells. Investigative Ophthalmology & Vision Science. 56,8340-8348

Yanez-Soto B, Mannis MJ, Schwab IR, Li JY, Leonard B, Abbott NL, Murphy CJ (2014). Interfacial phenomena and the ocular surface. The Ocular Surface, 12(3),178-201

Yanez-Soto B, Liliensiek SJ, Murphy CJ, Nealey PF (2013). The influence of substrate topography on the migration of corneal epithelial wounds borders. Biomaterials. 34(37), 9244-9251

Yanez-Soto B, Liliensiek SJ, Murphy CJ, Nealey PF. (2013). Biochemically and Topographically engineered poly(ethylene glycol) diacrylate hydrogels with biomimetic characteristics as substrates for human corneal epithelial cells. Journal of Biomedical Materials Research A. 101A, 1184-1194

Wilson MJ, Jiang Y, **Yanez-Soto B**, Liliensiek S, Murphy WL, Nealey PF. (2012). Arrays of topographically and peptide-functionalized hydrogels for analysis of biomimetic extracellular matrix properties. Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures 30(6):06F903-06F903-7.

Tocce EJ, Liliensiek SJ, Wilson MJ, **Yanez-Soto B**, Nealey PF, Murphy CJ (2011). Engineering the Biophysical Properties of Basement Membranes into Biomaterials: Fabrication and Effects on Cell Behavior. In: P. Ducheyne, K. E. Healy, D. W. Hutmacher, D. W. Grainger, C. J. Kirkpatrick (eds.) Comprehensive Biomaterials, vol. 1, pp. 527-546. Elsevier.

SEMINARS AND PRESENTATIONS

Speaker, 2021 Week of the Institute of Physics, UASLP, San Luis Potosí, Mexico, Fall 2021
Speaker, 2021 AIChE Annual Meeting, Boston, MA, Fall 2021
Speaker, 2020 AIChE Annual Meeting, Online meeting, Fall 2020
Speaker, 32nd International Conference on Science and Technology of Complex Fluids, Online Congress, Fall 2020
Speaker, 2019 AIChE Annual Meeting, Orlando, FL, Fall 2019
Speaker, XXVIII International Materials Research Congress, Cancun, Summer 2019
Speaker, 31st International Conference on Science and Technology of Complex Fluids, Universidad Autónoma de San Luis Potosí, Summer 2019
1st Forum of Conacyt Fellow Researchears of UASLP, Universidad Autónoma de San Luis Potosí, Summer 2019
Poster presentation, Association for Research in Vision and Ophthalmology annual meeting, Vancouver, Canada, Spring 2019
Speaker, Seminar of the Advanced Materials Division of IPICYT, Spring 2019
Speaker, 2018 AIChE Annual Meeting, Pittsburgh, PA, Fall 2018
Speaker, Physics Colloquium, Institute of Physics and Mathematics, Universidad Michoacana de San Nicolas de Hidalgo, Fall 2018
Speaker, Seminar of the Graduate Program in Physical Engineering, School of Physics and Mathematics, UMSNH, Fall 2018
Speaker, XXVII International Materials Research Congress, Cancun, Summer 2018
Speaker, Seminar of the Graduate Program in Applied Sciences, Universidad Autónoma de San Luis Potosi, Summer 2018
Speaker, 6th meeting of the Mexican Network in Condensed Soft Matter, Querétaro, Summer 2018
Speaker, 2017 AIChE Annual Meeting, Minneapolis, MN, Fall 2017
Speaker, Seminar of the Graduate Program in Chemical Sciences, UASLP, Fall 2017
Speaker, Seminar in Physical Chemistry, Facultad de Quimica, UNAM, Fall 2017
Speaker, 5th meeting of the Mexican Network in Condensed Soft Matter, Universidad de Guanajuato, Summer 2017
Speaker, Workshop in state-of-the-art science, innovation and business: Building a much needed network, UASLP, Spring 2017
Speaker, National Polynnova Forum, Universidad Autónoma de San Luis Potosí, Spring 2017
Speaker, Seminar in Materials Science, Graduate Program in Materials Science and Engineering, UASLP, Spring 2017
Speaker, Seminar in Odontological Sciences, School of Estomatology, Universidad Autónoma de San Luis Potosi, Spring 2017
Speaker, 2016 AIChE Annual Meeting, San Francisco, CA, Fall 2016
Speaker, First meeting in tendencies in quantitative biology and biophysics UASLP-UC Berkeley, San Luis Potosi, Fall 2016
Poster presentation, 2015 AIChE Annual Meeting, Salt Lake City, UT, Fall 2015

Speaker, 27th International Conference on Science and Technology of Complex Fluids, Universidad Autonoma de San Luis Potosi, Summer 2015
Speaker, Physics Colloquium, Institute of Physics and Mathematics, Universidad Michoacana de San Nicolas de Hidalgo, Spring 2015
Speaker, Seminar in Statistical Physics, Institute of Physics, Universidad Autonoma de San Luis Potosi, Spring 2015
Speaker, 1st International Workshop on Matter Out of Equilibrium, San Luis Potosi, Mexico, Fall 2014
Speaker, 3rd Congress of the Mexican Soft Matter Network, Fall 2014
Keynote speaker, American College of Veterinary Ophthalmologists, Comparative Ocular Surface Disease Workshop, Fort Worth, TX, Fall 2014
Poster presentation, International Society for Eye Research, San Francisco, CA, Summer 2014
Speaker, Seminar in Statistical Physics, Institute of Physics, Universidad Autonoma de San Luis Potosi, Summer 2014
Poster presentation, Association for Research in Vision and Ophthalmology annual meeting, Orlando, FL, Spring 2014
Selected speaker at the Multicultural Graduate Network Fall Dine Around. Madison, WI, Fall 2012
Poster presentation. 4th annual McPherson ERI Vision Sciences & Visual Art Poster and Gallery Session, Fall 2012
First prize, poster presentation. Olaf A. Hougen Symposium, Spring 2012
Poster presentation. 3th annual McPherson ERI Vision Sciences & Visual Art Poster and Gallery Session, Fall 2011
Poster presentation. CBE Graduate Students Seminar. Spring 2011
Poster presentation. 2th annual McPherson ERI Vision Sciences & Visual Art Poster and Gallery Session, Fall 2010

AWARDS

Fulbright Fellowship	**September 2007** – **August 2010**
University of Northampton International Scholarship	**September 1998** – **August 1999**
UNAM Foundation Scholarship	**January 1994** – **December 1995**
Student Excellence Award	**1993** – **1997**

LANGUAGES

Spanish – Mother language
English – Fluent
French – speak, read and comprehend with basic proficiency

REFERENCES

Paul F. Nealey
Brady W. Dougan Professor in Molecular Engineering
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5640 South Ellis Avenue
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