John Pellegrino

Professor Research
Paul M. Rady Department of Mechanical Engineering
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PROFESSIONAL EXPERIENCE

Sep 2008 - present; Paul M. Rady Department of Mechanical Engineering, U. of Colorado-Boulder
Research interests include the broad aspects of membrane science and technology including materials, devices, and process conceptualization with applications to separations. Current projects focus on advanced membrane development and characterization, as well as, process development, experimental evaluation, and modeling analysis for applications in bioseparations, water treatment, and energy devices.
Oct 2003 – Dec 2008: CEAE Department, Univ. of Colorado, Boulder, CO
Apr 2001 – Dec 2003: Santa Fe Science and Technology, Santa Fe, NM
Apr 1987 – Apr 2001: National Institute of Standards and Technology, Physical and Chemical Properties Division, Boulder, CO
Sep 1982 – Jun 1986: E.I. duPont de Nemours & Co., Inc., Engineered Nonwoven Structures Division, Wilmington, DE
Jun 1973 – Aug 1976: Rohm & Haas Co., Chemical Process Engineering, Philadelphia, PA

EDUCATION

Graduate	University of Colorado, Boulder, CO, 1976 - 1982, **PhD & MS (ChE)**
Undergraduate	The City College of New York, NY, NY, 1968 - 1973, **BSChE**
High School	Brooklyn Technical HS, Brooklyn, NY, 1964 - 1968

TEACHING EXPERIENCE

Academic Courses

1976 – 1982 Department of Chemical Engineering, University of Colorado, Boulder, CO, Instructor and Teaching Assistant for various engineering courses
1991 Chemical Engineering and Petroleum Refining Department, Colorado School of Mines, Golden, CO, Graduate Elective Course: "Membrane-based separations."
2005 – 2008 Department of Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, CO, Lecturer,

- CVEN 6834 Special Topics (2005) "Physical characterization and measurement methods."
- CVEN 5834 Special Topics (2006) "Membrane-based separations."
- EVEN 4047 Special Topics (2008) "Techno-economic analysis for environmental engineering"

2006 Department of Chemical and Biological Engineering, University of Colorado, Boulder, CO, Lecturer, CHEN 3200 "Chemical engineering fluid mechanics."
2009 (ongoing) Department of Mechanical Engineering, University of Colorado, Boulder, CO, Lecturer,

- MCEN 4047 "Mechanical engineering laboratory"
- MCEN 5228 (special topics) "Membrane science seminar"
- MCEN 3032 "Thermodynamics 2"
- MCEN 5228 (special topics) "Mass transfer for engineers"
- MSEN 5919 (special topics) "Membranes"

Continuing Education Courses

1989 – 1991 AIChE Continuing Education Course: Membrane Separations, Active and Passive Transport, w/ R. D. Noble and C. A. Koval
1992 NAMS Annual Meeting Workshop: Membrane Separations: Active and Passive Transport, w/ R. D. Noble
1992 American Filtration Society Workshop: Membrane Separations: Active and Passive Transport
1995 NAMS Annual Meeting Workshop: Membrane Characterization Methods.
1996 NAMS Annual Meeting Workshop: Membrane Materials and Characterization.
1999 ICOM Meeting Workshop: Measurement Methods For Membranes.
2008 ICOM Meeting Workshop: Measurement Methods for Membranes.
2017 ICOM Meeting Workshop: Measurement Methods for Membranes.
2005-2020 NAMS Annual Meeting Workshops: Measurement Methods for Membranes.

Thesis Directed/co-Directed

1998 *Natural organic Matter (NOM) Rejection by, and Flux Decline of, Nanofiltration (NF) and Ultrafiltration (UF) Membranes*, Jaeweon Cho, CEAE Univ of CO, PhD (co-advisor w/ Gary Amy).
1999 *A Resistance Model for Evaluating Interactions Between Natural Organic Matter (NOM) and Membranes at Different Scales of Operation*, Scott Irvine, CEAE Univ of CO, MS (co-advisor w/ Gary Amy).
2001 *Rejection of Perchlorate by Reverse Osmosis (RO), Nanofiltration (NF), and Ultrafiltration (UF) Membranes*, Yoemin Yoon, CEAE Univ of CO, PhD (co-advisor w/ Gary Amy).
2002 *Relating Complex Solute Mixture Characteristics to Membrane Fouling Using Flow Field Flow Fractionation*, Scott Wright, CEAE Univ of CO, PhD (co-advisor w/ Gary Amy).
2005 *Initial Measurements and Test System Development for Evaluation of a Novel, Hybrid RO-Electrodialysis Process*, Craig Gorman, CEAE Univ of CO, MS.
2007 *A Novel Forward Osmosis Process for Water Recovery From All Sources*, Peter McCormick, CEAE Univ of CO, MS.
2008 *Evaluation of Nutrient Extraction and Membrane Processes to Facilitate the Reuse of Water, Chemical Consumables and Macronutrients During Lignocellulosic Biomass-To-Fuel Processing in Rural Communitie*s, Kendra R. Colyar, CEAE Univ of CO, MS.
2008 *Fractionation of Aqueous Copper and Iron Species with Ultrafiltration Membranes*, Daniel Small, CEAE Univ of CO, MS.
2010 *Designing Virus Filtration Membranes*, Emily D. Stump, Biomed E Colorado State Univ, MS (co-advisor w/ S.R. Wickramasinghe)
2011 *An Ambient-Pressure Absorption Heat Pump using Microporous Membranes: Design, Modeling, and Experimental Investigation*, Jason Woods, ME Univ of CO, PhD.
2012 *Characterization of Porous Membranes via Porometry*, Aabhash Shrestha, ME Univ of CO, MS.
2012 *Characterization of Ceramic and Polymeric Low Pressure Membranes: Impact of Performance Differences on Process Economics*, Katherine Guerra, CEE Colorado School of Mines, PhD. (co-advisor w/ John McCray)
2012 *Trapping and Detection of Magnetic Nanoparticles*, Charles Little, ME Univ of CO, MS.
2014 *Development of an Extractive Membrane Photobioreactor to Harvest Secreted Fuel Precursors and Metabolites from Microalgae,* Melissa Rickman, ChEB Univ of CO, PhD. (co-advisor w/ Robert Davis)
2015 *Separation Challenges and Optimizations of Sustainable Algae and Lignocellulose-based Biofuels,* Birendra Adhikari, ME Univ of CO, PhD
2015 *Simulations and Experiments for Fouling Mitigation on Patterned Nano-Imprint Lithography Ultrafiltration Membranes*, John Mersch IV, ME Univ of CO, MS

2017 *A Study on Crystallization Kinetics Using Steady State CSTRs,* Sankaranarayanan Ayyakudi Ravichandran, EVEN Univ of CO, MS
2020 *Engineering Material Surfaces for Energy and Separation Applications,* Jacob Hutfles, ME Univ of CO, PhD

PROFESSIONAL SOCIETIES

Current Member: North American Membrane Society, American Institute of Chemical Engineers (elected Fellow 2015), American Chemical Society
1997 – 2007; '17-'24: Director (President for 2004-2005), North American Membrane Society
1991-97;'06-'11 Director, AIChE Separations Division

PROFESSIONAL ACTIVITIES

Agency Programs

1997 - 2001 Co-chaired the NIST–Advanced Technology Program Focused Competition on *Selective Membrane Platforms (1998)* and continued as Technical Advisor to the ATP Program Managers (1998-2001).
1992 – 2001 Member of Intragovernmental Consortium on Desalination and Membrane Separation Research.

Editorial

1998 - present Editorial Board, Separation Science and Technology
2020 - present Editorial Board, Membranes
2015 - 2018 Editorial Board, Clean Technologies and Environmental Policy
1995 - 2007 Creator and co-editor of Internet home page for North American Membrane Society - http://www.membranes.org
1991 - 1996 Editorial Board, Gas Separations and Purification Journal

Meetings Organized

2021 Annual Meeting of the North American Membrane Society, Estes Park, CO - Meeting co-Chair.
2012 Water Treatment and Reuse-III: water-energy nexus, ECI Conference, January, 2012, Cancun, Mexico — Chair
2011 Emerging Research Opportunities in Energy Manufacturing, Pre-Conference Workshop January, 4, 2011, NSF CMMI Grantee Conference, Atlanta, GA — Co-Organizer
2004 Advanced Membrane Technology-II, ECI Conference, Irsee, Germany — Co-Organizer
2002 International Congress on Membranes, Toulouse, France – Member Scientific Advisory Committtee
2000 Gordon Research Conference on Separations and Purification, Colby-Sawyer, NH - Vice-chair (and chair-elect).
2000 Annual Meeting of the North American Membrane Society, Boulder, CO - Meeting Chair.
1996 - 2000 Membrane Conference on Technology/Planning - Member of Conference Advisory Board.
1991 AIChE Summer National Meeting, Pittsburg, PA, August 18-21, 1991 – Separations Division Program Chair.

Academic Appointments

2008 – present Professor Research, Paul M. Rady Department of Mechanical Engineering, University of Colorado-Boulder, CO.
2003 – 2008 Research Associate and Adjunct Professor, Civil, Environmental, and Architectural Engineering Department, University of Colorado – Boulder, CO.

2004 Member, Advisory Board, Department of Chemical and Petroleum Engineering, University of Southern California, Los Angeles, CA.
1993 – 1994 Visiting Scientist in Material Science Division (MST-11), Los Alamos National Laboratory, Los Alamos, NM.
1991 – 1992 Adjunct Professor, Chemical Engineering and Petroleum Refining Department, Colorado School of Mines, Golden, CO.
1989 – 1993 Industrial Advisory Board Member and Research Adviser, NSF-I/UCR Center for Separations using Thin Films, University of Colorado, Boulder, CO.
1986 - 1987 Research Associate, Chemical Engineering Department, University of Colorado, Boulder, CO: fiber optic thermometry for catalysis studies.

RESEARCH PROJECTS @CU

Oct 2020 to Sep 2022: *Power hungry: fuel cells harvesting biofluids for renewable power of wearable medical device*
Jul 2020 to Dec 2022: *Concentrate minimization: inline static mixer crystallizers*
Mar 2020 to Jul 2021: *Concentrate minimization: translation of lab-scale inline CSTRs-in-series crystallizers from model water to real applications*
Jul 2019 to Dec 2021: *Membrane pore connectivity, tortuosity, and soft particle transport*
Mar 2019 to Nov 2019: *Garnet/PVDF—HFP hybrid membranes for Li-metal batteries*
Jan 2019 to Jun 2020: *Power hungry: fuel cells harvesting biofluids for renewable power of wearable medical devices*
Oct 2018 to Sep 2021: *Scaling resistant RO membranes*
Oct 2016 to Sep 2018: *Crystallization kinetics and surface patterns*
Sep 2014 to Jun 2017: *Scalable NIL-membranes*
Aug 2014 to Jul 2018: *Continuous, economical manufacture of nanocrystals for future industries and medicine*
Aug 2014 to Jun 2017: *Concentrate stream management with pellet softening*
May 2014 to Jun 2017: *Scalable NIL-membranes*
Jan 2014 to Jun 2018: *Interaction between soft particles and membranes*
Aug 2013 to Aug 2016: *Nanoimprinting porous ultrafiltration membrane for non-chemical fouling mitigation*
Jun 2013 to Sep 2015: *Development of a membrane-based separation process for the continuous enzymatic saccharification of lignocellulosic biomass*
Jul 2012 to Jun 2013: *Nanoscale roughness effects on membranes*
Mar 2012 to Feb 2013: *2012 ECI conference*
Dec 2011 to Mar 2013: *UCAS: case studies and public dissemination*
July 2011 to Dec 2013: *Identification and development of a clarifying solid-liquid separator to enable continuous enzymatic saccharification*
Apr 2011 to Sep 2013: *Concentrate stream modeling and electromagnetic effects on crystallization*
Jan 2011 to Dec 2013: *Graphene mixed-matrix TFC membranes for CO_2 and water separations*
Jan 2011 to Dec 2011: *Assistance in development of dessicant-based air conditioners*
Jan 2011 to Dec 2012: *Wet-lipid extraction from algae*
Jan 2011 to Jul 2011: *Utility-connected algae systems:analysis and decision tools-Part 3*
Jan 2011 to Dec 2013: *Extractive photobioreactor*
Jan 2010 to Dec 2010: *Utility-connected algae systems:analysis and decision tools-Part 2*
Jan 2010 to Dec 2012: *Effect of microporous membrane properties and operating conditions on the fractionation of different particle sizes*
Oct-2009 to Dec 2009: *Utility-connected algae systems:analysis and decision tools-Part 1*

Dec 2008 to Jan 2010: *Bench-scale studies of algae dewatering-lysing-oil extraction and water reuse via membrane hybrid processes*
Oct 2008 to Sep 2010: *Sustainable algae-to-fuels: environmental and economic realities*
Jan 2009 to Dec 2011: *Methods for characterization of asymmetry in microporous membranes*
Sep 2008 to Sep 2009: *"Rapid screening tool" for water fouling potential assessment*
Jan 2008 to Dec 2011: *Development of an artificial contaminant and suitable detection method for simulation of 20 nm viruses such as MS2 or parvovirus*
Jul 2007 to Jun 2010: *Optimization of water reuse for an enzyme-based lignocellulosic conversion process*
Oct 2006 to Sep 2008: *Polyvalent ion separations*
Feb 2006 to Feb 2007: *Separation of lignin and sugars from alkaline matrix in biomass processing*
Nov 2005 to Sep 2006: *Concentrate precipitation: brine stream modeling and comparison to real streams*
Jul 2005 to Dec 2007: *Hybrid processes for recovery of water from all sources*
Jul 2004 to Nov 2004: *Concentrate precipitation: review of state-of-the art and prospects for process improvements*
Oct 2003 to Feb 2005: *Plant-scale engineering design of membrane processes from bench-scale measurements, version 1*
Oct 2003 to Sep 2005: *Analysis and proof of concept measurements for hybrid RO-ED*

PUBLICATIONS (Google Scholar h index = 30; total citations = 4687)

In preparation

1. Lostec, G.; Koo, K-H.; Pellegrino, J.; Vernerey, F. Novel model for deformable particles through porous networks, for J. Membrane Science.
2. Ravichandran, S.A.; Hutfles, J.; Velasco, J.; Killgore, J.; Pellegrino, J. Surface versus bulk $CaCO_3$ crystals with EVOH co-polymers and polyamide thin-film composite membranes, for Colloids and Surfaces A: Physicochemical and Engineering Aspects.
3. Ravichandran, S.A.; Hutfles, J.; Pellegrino, J. Crystallizers for brine waste treatment: technologies and design heuristics, in *Solid-Liquid Separation Technology and Application to Produced Water Treatment*, eds. I. Gamwo and O. Ogunsola, CRC Press.

Accepted (available online)

In Peer-Reviewed Journals and Books

1. Hutfles, J.; Ravichandran, S.A.; Pellegrino, J. Screening polymer surfaces in crystallization, Colloids and Surfaces A: Physicochemical and Engineering Aspects 582, 123869. (2019). https://doi.org/10.1016/j.colsurfa.2019.123869
2. Hutfles, J., Lumley, C., Chen, X., Ren, Z.J., Pellegrino, J., Graphene-integrated polymeric membrane as a flexible, multifunctional electrode. Chemical Engineering Science 209, 115221 (2019). https://doi.org/10.1016/j.ces.2019.115221
3. Ravichandran, S.A.; Krist, J.; Edwards, D.; Delagah, S.; Pellegrino, J. Measuring sparingly-soluble, aqueous salt crystallization kinetics using CSTRs-in-series: methodology development and $CaCO_3$ studies, Sep. Pur. Technol. 211 (2019) 408-420. doi: /10.1016/j.seppur.2018.09.084
4. Benet, E.; Lostec, G.; Pellegrino, J.; Vernerey, F. Mechanical instability and percolation of deformable particles through porous networks, Phys. Rev. E. 97 (4) (2018) 042607, doi: /10.1103/PhysRevE.97.042607.
5. Stickel, J.J.; Adhikari, B; Sievers, D.A.; Pellegrino, J. Continuous enzymatic hydrolysis of lignocellulose in a membrane-reactor system, J. Chemical Technology and Biotechnology 93, (8) (2018) 2181-2190. doi: 10.1002/jctb.5559.
6. Hutfles, J., Chapman, W. and Pellegrino, J. Roll-to-roll nanoimprint lithography of ultrafiltration membrane. J. Appl. Polym. Sci. 135 (11) (2018), 45993. doi: 10.1002/app.45993.

7. Benet, E.; Badran, A.; Pellegrino, J.;Vernerey, F. The porous media's effect in the permeation of elastic (soft) particles, J. Membr. Sci. 535 (2017) 10-19.
8. Rickman, M.; Maruf, S. H.; Kujundzic, E.; Davis, R. H.; Greenberg, A. R.; Ding, Y.; Pellegrino, J. Fractionation and flux decline studies of surface-patterned nanofiltration membranes using NaCl-glycerol-BSA solutions. J. Membr. Sci. 527 (2017) 102-110.
9. Pellegrino, J.; Schulte, L.R.; De la Cruz, J.; Stoldt, C. Membrane processes in nanoparticle production, J. Membr. Sci. 522 (2017) 245-256.
10. Ostwal, M.; Lu, X.; Beuscher, U.; Pellegrino, J. Effect of microporous membrane properties and operating conditions on particle retention: measurements and model studies, Sep. Sci. Technol., 51 (2016) 1007-1021.
11. Adhikari, B.; Pellegrino, J. Life-cycle assessment of five microalgae-to-biofuels processes of varying complexity, J. Renewable Sustainable Energy 7, 4 (2015) 043136. DOI: 10.1063/1.4929462.
12. Wang, L.; Drahushuk, L.W.; Cantley, L.; Koenig, S.P.; Liu, X.; Pellegrino, J.; Strano, M.S.; Bunch, J.S. Quantized switching of gas transport through molecular-sieving graphene membranes, Nature Nanotechnology 10 (2015) 785-790. DOI: 10.1038/NNANO.2015.158.
13. Lu, X.; Shah, P.; Maruf, S. H.; Ortiz, S.; Hoffard, T.; Pellegrino, J., Forensic analysis of degraded polypropylene hollow fibers utilized in microfiltration. J. Appl. Polym. Sci. 132 (2015) 41553-41564. DOI: 10.1002/APP.41553
14. Foucard, L.C.; Pellegrino, J.; Vernerey, F.J. Particle-based moving interface method for the study of the interaction between soft colloid particles and immersed fibrous network, CMES 98 (2014) 101-127.
15. Wang, L.; Drahushuk, L.W.; Cantley, L.; Koenig, S.P.; Liu, X.; Pellegrino, J.; Strano, M.S.; Bunch, J.S. Quantized switching of gas transport through molecular-sieving graphene membranes, Nature Nanotech (2014) in review.
16. Rickman, M.; Davis, R.; Pellegrino, J. Temperature-variation study of neutral solute and electrolyte fractionation through cellulose acetate and polyamide membranes, J. Membrane. Sci. 461 (2014) 114-122.
17. Maruf, S.H.; Greenberg, A.R.; Pellegrino, J.; Ding, Y. Fabrication and characterization of a surface-patterned thin film composite membrane, J. Membrane. Sci. 452 (2014) 11-19.
18. Maruf, S.H.; Rickman, M.; Wang. L.; Mersch IV, J.; Greenberg, A.R.; Pellegrino, J.; Ding, Y. Influence of sub-micron surface patterns on the deposition of model proteins during active filtration, J. Membrane. Sci. 444 (2013) 420-428.
19. Rickman, M.; Davis, R.; Pellegrino, J. Fractionation of organic fuel precursors from electrolytes with membranes. Ind. Eng. Res. Chem. 52 (2013) 10530-10539.
20. Little, C.A.E.; Pellegrino, J.; Russek, S. Microfluidic platform for magnetic nanoparticle trapping and detection, IEEE Transactions on Magnetics 49 (2013) 3402-3405.
21. Maruf, S.H.; Wang. L.; Greenberg, A.R., Pellegrino, J.; Ding, Y. Use of nanoimprinted surface patterns to mitigate colloidal deposition on ultrafiltration membranes. J. Membrane. Sci. 428 (2013) 598-607.
22. Koenig, S.P.; Wang, L.; Pellegrino, J.; Bunch, J.S. Selective molecular sieving through porous graphene. Nature Nanotechnology 7 (2012) 728-732.
23. Rickman, M.; Pellegrino, J.; Hock, J.; Shaw, S.; Freeman, B. Life-cycle and techno-economic analysis of utility-connected algae systems. Algal Res. 2 (2013) 59-65.
24. Rickman, M.; Pellegrino, J.; Davis, R. Fouling phenomena during membrane filtration of microalgae. J. Membr. Sci. 423-424 (2012) 33-42.
25. Shrestha, A.; Pellegrino, J.; Husson, S.; Wickramasinghe, R. A modified porometry approach towards characterization of MF membranes. J. Membr. Sci. 421-422 (2012) 145-153.

26. Woods, J; Pellegrino, J. Design approach and model applicability for membrane-based heat and mass transfer devices, Intl. J. Heat and Mass Transfer. 59 (2013) 46-57.
27. Guerra, K.; Pellegrino, J. Development of a techno-economic model to compare ceramic and polymeric membranes, Sep. Sci. Technol. 48 (2013) 51-65.
28. Maruf, S.H.; Ahn, D.U.; Pellegrino, J.; Kilgore, J.P.; Greenberg, A.R.; Ding, Y. Relationship between barrier layer T_g and TFC membrane performance: effect of chlorine treatment, J. Membr. Sci. 405-6 (2012) 167-175.
29. Guerra, K.; Pellegrino, J.; Drewes, J. E. Impact of operating conditions on permeate flux and process economics for cross flow ceramic membrane ultrafiltration of surface water, Sep. Pur. Technol. 87 (2012) 47-53.
30. Amer, L.; Adhikari, B.; Pellegrino, J. Technoeconomic analysis of five microalgae-to-biofuels processes of varying complexity, Bioresource Technol. 102 (2011) 9350-9359.
31. Marroquin, M.; Bruce, T.; Pellegrino, J.; Wickramasinghe, S.R.; Husson, S.M. Characterization of asymmetry in microporous membranes by cross-sectional confocal laser scanning microscopy. J. Membr. Sci. 379 (2011) 504-515.
32. Woods, J., J. Pellegrino, E. Kozubal, and J. Burch, Design and experimental characterization of a membrane-based absorption heat pump. J. Membrane Sci. 378 (2011) 85-94.
33. Woods, J., J. Pellegrino, and J. Burch, Generalized guidance for considering pore-size distribution in membrane distillation. J. Membrane Sci. 368 (2011) 124-133.
34. Wickramasinghe, S. R., E. D. Stump, D. L. Grzenia, S. M. Husson, and J. Pellegrino, Understanding virus filtration membrane performance. J. Membrane Sci. 365 (2010) 160-169.
35. Woods, J., J. Pellegrino, E. Kozubal, S. Slayzak, and J. Burch, Upgrading low-temperature heat with a membrane exchanger heat pump. 337 J. Membrane Sci. (2009) 113-124.
36. Gutierrez-Padilla, M.G.D., A. Bielefeldt, S. Ovtchinnikov, J. Pellegrino, and J. Silverstein, Simple scanner-based image analysis for corrosion testing: concrete application, 209 J. Mater. Process. Tech. (2009) 51-57.
37. Small, D.J., J. Pellegrino and Ma. Guadalupe Gutierrez-Padilla, Fractionation of aqueous copper and iron species with ultrafiltration membranes. in revision Ind. Eng. Res. Chem. (2008).
38. McCormick, P.J., J. Pellegrino, F. Mantovanni, and G. Sarti, Water, salt, and ethanol diffusion through membranes for water recovery by forward (direct) osmosis processes, 325 J. Membrane Sci. (2008) 467-478.
39. Lu, W., K. Henry, C. Turchi, and J. Pellegrino, Incorporating ionic liquid electrolytes into polymer gels for solid-state ultracapacitors, 155 J. Electrochem. Soc. (2008) A361-A367.
40. Colyar, K.R., J. Pellegrino, K. Kadam, Fractionation of pre-hydrolysis products from lignocellulosic biomass by an ultrafiltration ceramic tubular membrane, 43 Sep. Sci. Tech. (2008) 447-476.
41. Lu, W., K. Henry, C. Turchi, and J. Pellegrino, Ionic liquid-incorporated gel polymer electrolytes for ultracapacitors, in *ECS Transactions*: Energy Systems for the Twenty-First Century: Opportunities for Applications of Solar, and Conversion Technologies, J. Weidner (ed.), Vol. 2, Issue 28, 15-26 (2007).
42. Pellegrino, J., C. Gorman, and L. Richards, A speculative hybrid reverse-osmosis/electrodialysis unit operation, 214 Desalination (2007) 11-30.
43. Ostwal, M.M., B. Qi, J. Pellegrino, A. Fadeev, I. Norris T. T. Tsotsis, M. Sahimi, and B. R. Mattes, Water sorption of acid-doped polyaniline powders and hollow fibers: equilibrium and kinetic response, 14 Ind. Eng. Res. Chem. (2006) 6021-6031.
44. Kwon, B., J. Cho, N. Park, J. Pellegrino, Organic nanocolloid fouling of UF membranes, 279 J. Membrane Sci. 209-219 (2006).

45. Pellegrino, J., S. Wright, J. Ranville, and G. Amy, Predicting membrane flux decline from complex mixtures using flow-field flow fractionation measurements and semi-empirical theory, 51 Water Sci. & Technol., (2005) 85-92.
46. Benko, K., J. Pellegrino, L.W. Mason, and K. Price, Measurement of water permeation kinetics across reverse osmosis and nanofiltration membranes: apparatus development, 270 J. Memb. Sci. 187-195 (2006).
47. Amy, G.,T.-U. Kim, J. Yoon, C. Bellona, J. Drewes, J. Pellegrino, and T. Heberer, Removal of micropollutants by NF/RO membranes, 5 Water Sci. & Technol.: Water Supply, (2005) 25-33.
48. Benko, K., J. Pellegrino, M. Chapman, Standardized hyperfiltration membrane testing and transport parameter evaluation, Desalination in revision (2005).
49. Norris, I., A. Fadeev, J. Pellegrino, and B.R. Mattes, Development of integrally-skinned asymmetric polyaniline hollow fibers for membrane applications, 153 Synth. Metals 57-60 (2005).
50. Wright, S., J. Pellegrino, J. Ranville, and G. Amy, Towards development of a surrogate aqueous mixture for studying flux decline characteristics of membranes and membrane processes, 252 J. Memb. Sci. 205-214 (2005).
51. Ostwal, M.M., J. Pellegrino, I. Norris T. T. Tsotsis, M. Sahimi, and B. R. Mattes, Water sorption of acid-doped polyaniline solid fibers: equilibrium and kinetic response, Ind. Eng. Res. Chem. 44 (2005) 7860-7867.
52. Wright, S., J. Pellegrino, and G. Amy, Humectant release from membrane materials, 246 J. Memb. Sci. 227-234 (2004).
53. Yoon, Y., G. Amy J. Cho, and J. Pellegrino, Systematic bench-scale assessment of perchlorate (ClO^-_4) rejection mechanisms by nanofiltration and ultrafiltration membranes, 39 (9) Sep. Sci. and Technol., 2105-2136 (2004).
54. Pellegrino, J, The use of conducting polymers in membrane-based separations: a review and recent developments, in Advanced Membrane Technology, Li, N.N., Drioli, E., and Lipscomb, G.G. (eds), Annals of the New York Academy of Sciences, Vol. 984, New York, NY, 289-305, (2003).
55. Yoon, Y., G. Amy, J. Cho, N. Her, and J. Pellegrino, Transport of perchlorate (ClO^-_4) through NF and UF membranes, 147 Desalination, 11-17, (2002).
56. Yi, X, K. Nerbonne and J. Pellegrino, Diffusion measurements using FTIR-ATR spectroscopy: lubricant diffusion in polypropylene, 56 (4) Appl. Spect., (2002).
57. Yi, X. and J. Pellegrino, Diffusion measurements using FTIR-ATR spectroscopy: water diffusion in polypropylene, 40 J. Poly. Sci., Part B: Poly. Phys., 980-991 (2002).
58. Yi, X., J. Portnoy, and J. Pellegrino, Diffusion measurements using ATR-FTIR Spectroscopy: use of penetrant fluid pressure to improve sample/IRE contact, 38 J. Poly. Sci., Part B: Poly. Phys., 1773-1787 (2000)
59. Cho, J., G. Amy, and J. Pellegrino, Membrane filtration of natural organic matter: comparison of flux-decline, NOM rejection, and foulants during filtration with three UF membranes, 127 Desalination, 283-298 (2000).
60. Pellegrino, J, Filtration and ultrafiltration equipment and techniques, 29 (1) Separation and Purification Methods (2000)
61. Todd, P., and J. Pellegrino, Electrokinetic Analyzers, 29 (1) Separation and Purification Methods (2000)
62. Cho, J., Amy, G., and J. Pellegrino, Membrane filtration of natural organic matter: factors and mechanisms affecting rejection and flux decline with charged ultrafiltration (UF) membranes, 164 J. Memb. Sci., 89-110 (2000).
63. Chapman Wilbert, M., S. Delagah, and J. Pellegrino, Variance in streaming potential measurements, 161 J. Memb. Sci., 247-261 (1999).

64. Cho, J., Amy, G., and J. Pellegrino, Membrane filtration of natural organic matter: initial comparison of rejection and flux decline characteristics with UF and NF membranes, 33, Water Res., 2517-2526 (1999).
65. Cho, J., G. Amy, J. Pellegrino, and Y. Yoon, Characterization of clean and natural organic matter (NOM) fouled NF and UF membranes, 118 Desalination, 101-108 (1998).
66. Pellegrino, J, Y.S. Kang, J. Tighe, and J. Portnoy, A modified approach to determining effective medium conductivity (diffusivity) for sphere in cube model, 37, Ind. Eng. Res. Chem., 704-706 (1998)
67. Chapman Wilbert, M., J. Pellegrino, and A. Zydney, Bench scale testing of surfactant modified RO/NF membranes, 115, Desalination, 15-32 (1998).
68. Tighe, J. and J. Pellegrino, Parametric analysis of the propagation of uncertainties in sorption measurements made with a pressure-decay apparatus, 33 (10) Sep. Sci. and Technol. 1387-1405, (1998).
69. Pellegrino, J. and Sikdar, S.K., Membrane Technology Fundamentals for Bioremediation, in Bioremediation: Principles and Practice, Irvine, R.L. and Sikdar, S.K. (eds), Technomic Publishing Co., Inc., Lancaster, PA, (1997).
70. Pellegrino, J.J., B.R. Mattes, and R. Radebaugh, Gas sorption in polyaniline, Part 1: emeraldine base, 29, 14, Macromolecules, 4985-4991 (1996).
71. Pellegrino, J.J. and Y. S. Kang, CO_2/CH_4 Transport in Polyperfluorosulfonate Ionomers: Effects of Polar Solvents on Permeation and Solubility, 99, J. Memb. Sci., 163-174, (1995).
72. Ko, M.K., K.D. Cole, and J.J. Pellegrino, Determination of Total Protein Adsorbed on Solid (Membrane) Surface by a Hydrolysis Technique: Single Protein Adsorption, 93, J. Memb. Sci., 21-30 (1994).
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79. Pellegrino, J.J., M. Ko, R. Nassimbene and M. Einert, Selective Transport of CO_2 and H_2S Using Facilitated Transport in Gel Ion-Exchange Membranes, Gas Separation Technology, E.F. Vansant and R. Dewolfs (eds.), Process Technology Proceedings, 8, Elsevier, Amsterdam (1990).
80. Heaney, M.D. and J.J. Pellegrino, Increased facilitated transport related to microstructural changes in heat treated ion-exchange membranes, J. Membr. Sci., 47, (1989) 143 - 161.
81. Noble, R.D., J.J. Pellegrino and C.A. Koval, Overview of facilitated transport, Chem Eng Prog, Mar, (1989).
82. Pellegrino, J.J., R. Nassimbene and R.D. Noble, Facilitated Transport of CO_2 through Highly Swollen Ion-Exchange Membranes: The Effect of Hot Glycerine Pretreatment, Gas Sep & Pur, 2, 3 (1988).

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85. Pellegrino J.J., R.I. Gamow and R.L. Sani, Mass Transfer from Phycomyces in the Avoidance and Anemotropic Responses: Numerical Modeling, J. theo. Biol. 105, 77-90 (1983).

Patents (issued and in review)

J.J. Pellegrino, M. K. Ko and P. Marko, Methods of making and using improved microporous hollow fibers, the improved hollow fibers and tube bundles constructed of the improved bundles, US Patent 5,258,202, (1993).

J.J. Pellegrino, R. Rabago, R.D. Noble and C.A. Koval, Enhancing performance of perfluorinated ionomer membranes via dopant incorporation, US Patent 5,417,832 (1995).

J. Pellegrino and J. Bzdek, Methods of purifying biodiesel fuels, U.S. Patent Application No. 20080092435, filed October 23, 2007.

Y. Ding, S. Maruf, J. Pellegrino, A. Greenberg, Enhancing filtration performance of membranes with nanoscale patterns. U.S. Patent No. 10,369,525 (2019).

Reviewed Research Reports

Rickman, M.; Pruisner, P.; Pellegrino, J. Comparative life-cycle analysis of conventional and alternative algae processing scenarios., EPRI, Palo Alto, CA: 2014. 3002001215.

Amy, G., Y. Yoon, J. Yoon, M. Song, J. Pellegrino, S. Liang, K. Scott, and J. H. Min, Treatability of perchlorate-containing water by RO, NF, and UF membranes, American Waterworks Research Foundation Report No. 90932 (2003).

Amy, G., J. Cho, Y. Yoon, S. Wright, M.M. Clark, E. Molis, C. Combe, Y. Wang, P. Licas, Y. Lee, M. Kumar, K. Howe, K-S. Kim, J. Pellegrino, S. Irvine, NOM rejection by, and fouling of, NF and UF membranes, American Waterworks Research Foundation Report No. 90837 (2001).

Chapman Wilbert, M., Q. Zhang, J. Pellegrino, and J. Scott, Water Treatment Estimation Routine (WaTER) User Manual. USBR DWPR Report #43, available at http://www.usbr.gov/water/reports.html (1999).

Clark, M.M.; Allgeier, S.; Amy, G.; Chellam, S.; DiGiano, F.; Elimelech, M.; Freeman, S.; Jacangelo, J.; Jones, K. Laine, J-M.; Lozier, J.; Marinas, B.; Riley, R.; Taylor, J.; Thompson, M.; Vickers, J.; Wiesner, M.; Zander, A.; Baudin, I.; Combe, C.; Duraneau, S.; Kocherginsky, N.; Manem, J.; Mickley, M.; Pellegrino, J.; Ridgway, H.; Urbain, V., Committee Report: Membrane Processes—AWWA Membrane Technology Research Report, J. - Am. Water Works Assoc., 90(6), 91-105, (1998).

Stull, D.M; B. W. Logsdon; J. Pellegrino, An Investigation of Gas Separation Membranes for Reduction of Thermal Treatment Emissions. DOE/OSTI-4500-R75, RFP-4641 (1994).

Professional Trade Journals and Newsletters

King, D. S. and J.J. Pellegrino, Putting Membranes to Work in the Specialty Chemicals Industry, Membrane Technology, No. 91, 7-11 (1997).

Perz, K. and J.J. Pellegrino, "A Technique for Determining Optimal Build Quantities for Product Phase-Out", P&IM Review, Feb (1987).

Selected Proceedings

Pellegrino, J.J.; Stull, D.M.; and Logsdon, B.W., “Membrane Gas Separation for Fluidized-Bed Incinerator”, Proc. of the American Filtration Society Meeting, Chicago, IL, (1993).

Ko, M.K.; Cole K.; and Pellegrino, J.J., "Determination of Total Adsorbed Protein on Solid (Membrane) Surfaces", Proc. of the American Filtration Society Meeting, Chicago, IL, (1993).

Pellegrino, J.J., "Gas Separation Using Ion exchange Membranes for Producing Hydrogen from Synthesis Gas", Proc. of 11th Annual Gasification and Gas Stream Cleanup Systems Contractors Review Meeting - DoE, Morgantown, WV, (1991).

Pellegrino, J.J., "NIST Research at the Ultrafiltration Interface", Proc. of 1990 Membrane Planning/Technology Conference, Cambridge, MA., (1991).

Pellegrino, J.J., "An Overview of Facilitated Transport Membranes: Technology and Applications", Proc. of 1989 Membrane Planning/Technology Conference, Cambridge, MA., (1990).

Pellegrino, J.J., "An Overview of Membrane Separations Research at NIST/CCT", Proc. of 1988 Membrane Planning/Technology Conference, Cambridge MA, (1989).

PRESENTATIONS

Invited Talks

"Engineered membrane roughness: why and how?" Imagine Membrane: A Patrick Meares membrane research conference, Horta, Faial, Azores, Portugal, Sep 25, 2019.

"Innovations in Food-Energy-Water systems" 8th Annual 21st Century Energy Transition Symposium, Denver, CO, Apr 1, 2019.

"Advances and challenges for useful membrane characterization" Imagine Membrane: A Patrick Meares membrane research conference, Horta, Faial, Azores, Portugal, Sep 26, 2017.

"Surface modifications v. hydrodynamics: channeling Nikuradse" Gordon Research Conference Membrane: materials and processes, Colby-Sawyer, New London, NH, Aug 4, 2016.

"Graphene: from scotch tape to Nobel prizes to membranes — potentially practical" European Membrane Society Summer School, Bertinoro, Italy, Jun 26, 2016.

"Membrane surface topology vs. surface chemistry for deposition resistance" Topical session: Advanced Membrane Separations, Pacifichem 2015, Honolulu, HI, Dec 19, 2015.

"Development of a membrane-based separation process for the continuous enzymatic saccharification of lignocellulosic biomass" 37th Symposium on Biotechnology for Fuels and Chemicals, San Diego, CA, Apr 29, 2015.

"Engineered membrane roughness: the potential of patterns" Advanced Membrane Technology VI: Water, Energy, and New Frontiers, ECI Siracusa, Italy, Feb 12, 2015.

"Development of an extractive membrane photobioreactor to harvest secreted fuel precursors and metabolites from algae" DOE BETO Algal Biofuels Strategy, Spring Workshop, Charleston, SC, Mar, 26, 2014.

"Engineered membrane roughness: the promise of patterns" Clemson University, Department of Chemical and Biomolecular Engineering, Clemson, SC, Mar 25, 2014.

"Membrane separations as 'lever' points in biomass-based processes" 2013 Annual Meeting of AIChE, in Topical Plenary: Advanced Separations for Sustainability, San Francisco, CA, Nov 5, 2013.

" Fractionation of electrolytes and neutral organics for water reuse in sustainable biomass processes: membrane evaluations" Advances in Science and Engineering for Brackish Water and Seawater Desalination II, ECI, Cetraro, Italy, Sep 29, 2013.

" Process screening using simplified techno-economic and LCA modeling for algae-based systems" INEST: Nuclear Hybrid Energy Systems CORE Workshop, Idaho Falls, ID, Jul 24, 2013.

"Design analysis for membrane-based heat pump devices" International Workshop on Membrane Distillation and Related Technologies, ITM-CNR, Ravello (SA), Italy, Oct 10, 2011.

"Design analysis for membrane-based heat pump devices" International Workshop on Membrane Distillation and Related Technologies, ITM-CNR, Ravello (SA), Italy, Oct 10, 2011.

"Membrane characterization: it just keeps on getting better!" ICOM 2011, Amsterdam, NL, Jul 28, 2011.

"Sustainable algae-to-fuel: technical, economic, and environmental levers" Hanyang University, Seoul, South Korea, Oct. 27, 2010.

"Utility-connected algae systems: a review of scenarios." Algal Biomass Summit, Phoenix, AZ, Sep 29, 2010.

"Overview of membranes." 5th Int'l Meeting on Polymer Derived Ceramics and Related Materials, University of Colorado, Boulder, CO, Aug. 4, 2010.

"Sustainable algae-to-fuel: technical, economic, and environmental levers." NIST, Gaitherburg, MD, Jul 18, 2010.

"Water reuse for lignocellulosic-based ethanol biorefinery." Advances in Science and Engineering for Brackish Water and Seawater Desalination, ECI, Cetraro, Italy, May 11, 2010.

“Empirical parameters of flux-decline kinetics based on water and membrane properties.” Water Treatment and Reuse-II, ECI, Tomar, Portugal, Feb 13, 2007.

“Membrane transport”, Interfacial Water Workshop, Sandia National Laboratory, Santa Fe, NM, Apr 24-25, 2005.

“Hybrid RO/ED”, Office of Naval Research-Global Workshop, London, UK, Oct 13-14, 2004.

“RO Improvements”, Office of Naval Research Water Desalination Workshop, Arlington, VA, May 6-7, 2003.

“Membranes succeed by separating: the genesis”, NSF-STC Center of Advanced Materials Materials for Purification of Water with Systems, University of Illinois, Champaign-Urbana, Urbana, IL, Apr 11, 2003.

“An overview of measurement needs and developments for water treatment membranes”, 3rd Membrane Standardization Symposium (Membranes for the Production of Drinking Water), Korean Membrane Society, Hanyang University, Seoul South Korea, Oct 16, 2002.

“Polyaniline for gas separations: sorption measurements and mechanistic insights”, 1994 Gordon Research Conference on Separations and Purification, New London, NH, Aug 4, 1994.

"An overview of membrane separations research at NIST,” 1988 Membrane Technology and Planning Conference, Cambridge, MA, Nov 1, 1988.

Invited Seminars

"Crystallization of supersaturated waters: membranes, process, kinetics, and surfaces" The University of Alabama, Department of Chemical and Biological Engineering, Tuscaloosa, AL, Oct 1, 2020.

"Crystallization of supersaturated waters: kinetics and surfaces" Columbia University, Department of Earth and Environmental Engineering, New York, NY, Oct 9, 2019.

"Designing membranes for their end-uses" 3M Filtration and Separations Tech Forum, St. Paul, MN, Apr 3, 2018.

"Patterning of commercial membranes: motivation, mechanisms, and scale-up" Department of Chemical & Biological Engineering and Chemical Science, King Abdullah University of Science & Technology (KAUST), Kingdom of Sudi Arabia, May 8, 2017.

"Development of membrane-enabled continuous enzymatic saccharification of lignocellulosic biomass" Università degli Studi di Bologna, Bologna, Italy Feb 06, 2015.

"Algal biomass processing: separations focus", Heliae Development LLC, Gilbert, AZ, Nov, 15, 2012.

"Fractionation with membranes: on measurements, applications, and molecular sieving" CAMS Seminar Series, Pall Corporation, Port Washington, NY, April 13, 2012.

"Measurement methods for membranes," Hanyang University, Seoul, South Korea, Oct. 27-29, 2010.

"Engineering of a membrane-assisted heat pump for solar home-heating," Seoul Natonal University, Seoul, South Korea, Nov. 4, 2009.

"Measurement methods for membranes," Hanyang University, Seoul, South Korea, Nov. 3-5, 2009.

"Sustainable algae-to-fuel: a review of technology and opportunities," Gwangju Institute of Science and Technology, Gwangju, South Korea, Nov 2, 2009.

"Scalable membrane separations for water reuse in biomass processing" NREL, Golden, CO, Jan. 5, 2009 and New Jersey Institute of Technology, ChBPh Department, Newark, NJ, Apr. 24, 2009.

"Fractionation of pre-hydrolysis products from lignocellulosic biomass processing" Colorado State University, Chemical and Biological Engineering Department, Fort Collins, CO, Aug. 24, 2007.

“Desalination: perspectives and state-of-the-art,” Gwangju Institute of Science and Technology, Gwangju, South Korea, April 9-10, 2007.

“Water sorption of acid-doped polyaniline powders and hollow fibers: equilibrium and kinetic response,” Università degli Studi di Bologna, Bologna, Italy Apr 13, 2006.

“RO Improvements and other membrane-related developments”, Saehan Industries, Seoul South Korea, Jun 10, 2004.

“Predicting membrane flux decline from complex mixtures using flow-field flow fractionation measurements and semi-empirical theory”, New Jersey Institute of Technology, Newark, NJ, Feb 23, 2004.

“Simple systems can be complicated: measuring and analyzing chemical interactions during mass transfer through membranes and barrier materials”, Korean Institute for Science and Technology, Seoul, Korea, Oct 17, 2002.

“Towards predicting membrane flux decline from complex mixtures using flow-field flow fractionation measurements and semi-empirical theory”, GIST, Gwangju, Korea, Oct 18, 2002.

“Membrane characterization”, 1996 IMSTEC Pre-Conference Workshop, University of New South Wales, Sydney, Australia, Nov 10, 1996.

“Formation and use of PFSA composite films for separations" - 3M Corporate Technology Center, Minneapolis-St. Paul, MN. Apr 11, 1991.

"NIST research on ultrafiltration" - Millipore Corporation, Bedford, MA. Oct 1990.

"Facilitated transport in gel ion-exchange membranes", Center for Membrane Technology, University of Twente, Enschede, Netherlands, Sep 18, 1989.

"A tutorial on membrane separations and facilitated transport" Seminar for United Technologies, Hartford, CT, Nov 21, 1988.

"H_2S removal from natural gas with facilitated transport membranes - a field test" - Seminar at Chevron Cripple Creek Plant, Evanston, WY, Sep 6, 1989.

"Tyvek spunbonded olefin", course on microbiological integrity of medical grade webs, University of Manchester, Dep't of Pharmacy, Manchester, England Mar 10, 1984.

Selected recent presentations

"Lab-scale studies on crystallization kinetics of supersaturated waters" Industrial water use and reuse workshop: AIChE RAPID Institute, San Antonio, TX Nov 16, 2018.

"The porous media effect in the permeation of soft particles" 2017 International Congress on Membranes and Membrane Processes, San Francisco, CA Aug 3, 2017.

"Development of a membrane-based separation process for the continuous enzymatic saccharification of lignocellulosic biomass" 25th Annual Meeting of the North American Membrane Society, Boston, MA, Jun 1, 2015.

"Particle deformability affects the transport of soft colloids through microfilters" 25th Annual Meeting of the North American Membrane Society, Bostom, MA, Jun 2, 2015.

"On fractionation of organic fuel precursors from electrolytes with RO and NF membranes", 249th ACS National Meeting, Denver, CO, Mar 26, 2015.