

**Dibakar Bhattacharyya(DB)**

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**EDUCATIONAL QUALIFICATIONS**

Illinois Institute of Technology, USA	Environmental Engineering	Ph.D., 1966
Northwestern University, USA	Chemical Engineering	M.S., 1963
Jadavpur University, India	Chemical Engineering	B.S., 1962

**HONORS AND AWARDS**

**2018** Sturgill Award for Graduate Education, **2016** Distinguished Lecturer, Monash University, Australia; **2015** Bill Barfield Award for Outstanding Contributions in Water Resources Research in the Membrane Field; **2013** Inaugural University of Kentucky College of Engineering **Outstanding Researcher** (Full Professor level) award; **Epstein Award** (2010) from AIChE for outstanding service in technical programming and to chemical engineering profession; **Gerhold Award** (2009) from AIChE for outstanding accomplishments in the field of Separations; **Kirwan Memorial Prize** for outstanding contributions to original research 2004; **Larry K. Cecil** AIChE Environmental Division Award 1986; Special Technical Session Honoring D. Bhattacharyya, 2007 North American Membrane Society Annual Conference, Orlando, Florida, May 2007; Elected as a **Fellow** of the American Institute of Chemical Engineers 1994; **University of Kentucky Great Teacher Awards 1984, 1996 and 2008**; UK Chancellor's Award for Outstanding **Teaching** 1992; Kentucky Academy of Science Award for Distinguished Scientist 1989; Henry M. Lutes Award for Undergraduate **Engineering Educator** 1989; Outstanding **Counselor** Award (National AIChE) 1983, 1991; Outstanding AIChE **Student Chapter** (National) Award 1984, 1985, 1986, every year from 1988 – 2009, Special Technical Sessions Honoring D. Bhattacharyya, 2007 North American Membrane Society Annual Conference, Orlando, Florida, May 2007, and in 2015 AIChE Annual Meeting, Salt Lake City ; Keynote Speaker at the Sept 2012 Euromembrane Conf (London); Keynote Speaker Aseanian Membrane Society Conf (AMS 10) , Nara, Japan (2016); Keynote speaker ICOM2014, China.; Conference Chair **ECI Advanced Membrane Conf VI** (Italy, Feb 2015)

**Selected Society Activities:**

President North American Membrane Society (June 2015 – June 2016); Elected (National) in the Board of North American Membrane Society (2013-2017); Elected (National) as Chair of AIChE Separations Division (2010-2011); Meeting Program chair of two Annual AIChE meetings; past Directors of North American Membrane Society (2014-2018 and AIChE Environmental Division; 1981 – 2009 AIChE Student Chapter Advisor

**SELECTED PUBLICATIONS (out of 226 refereed publications)**

1. Akbari, A., Meragawi, S.E., Martin, S.T., Corry, B., Shamsaei, E., Easton, C.D., Bhattacharyya, D., Majumder, M. "Solvent Transport Behavior of Shear Aligned Graphene Oxide Membranes and Implications in Organic Solvent Nanofiltration", *ACS Applied Materials and Interfaces*, 10 (2), pp. 2067-2074(2018).
2. Saiful, S., Hernandez, S., H. Wan, Ormsbee, L., Bhattacharyya, D., "Role of membrane pore polymerization conditions for pH responsive behavior, catalytic metal nanoparticle synthesis, and PCB degradation", *J. Membrane Science*, doi.org/10.1016/j.memsci.2018.03.060, Vol 555, 348-361 (2018)
3. Detisch, Michael, Balk, T, and Dibakar Bhattacharyya, "Synthesis of Catalytic Nanoporous Metallic Thin Films on Polymer Membranes", *IEC Research*, DOI: 10.1021/acs.iecr.8b00053, 57 (12), pp 4420–4429 (2018).
4. Colburn, A. Kim, D.Y, Wanninayake, N, and D. Bhattacharyya, "Cellulose-Graphene Quantum Dot Composite Membranes Using Ionic Liquid", *J. Membrane Science*, 556, 293-302 (2018)
5. Nazari, R., Rajić, L., Ciblak, A., Hernández, S., Mousa, I., Zhou, W., Bhattacharyya, D., Alshawabkeh, A. N., "Immobilized palladium-catalyzed electro-Fenton's degradation of chlorobenzene in groundwater", *Chemosphere*, 216, 556-563 (February 2019).
6. Aher, A., Cai, Y., Majumder, M., and Bhattacharyya, D., "Synthesis of Graphene Oxide Membranes and their behavior in Water and Isopropanol", *CARBON*, 116,145-153 (2017).
7. Sarma, R., Saiful, M., Miller, A., and Bhattacharyya, D., "Layer-by-Layer assembled laccase enzyme on stimuli-responsive membranes for chloroorganics degradation", *ACS Applied Materials & Interfaces*, 9 (17), pp 14858–14867 (2017)
8. Wan, H., Saad, A., Ormsbee, L, and Bhattacharyya, D. "Pore Functionalized PVDF Membranes with In-Situ Synthesized Metal Nanoparticles: Material Characterization, and Toxic Organic Degradation", *J. Membrane Science*, doi.org/10.1016/j.memsci.2017.02.021, 530, 147- 157 (2017)
9. Ashish Aher, Joseph Papp , Andrew Colburn , Hongyi Wan , Evan Hatakeyama , Prakhar Prakash , Ben Weaver, Dibakar Bhattacharyya, "Naphthenic acids removal from high TDS produced water by persulfate mediated iron oxide functionalized catalytic membrane, and by nanofiltration", *Chemical Engineering Journal*, 327, 573–583 (2017)
10. Sebastián Hernández, Cassandra Porter, Xinyi Zhang, Yinan Wei. and Dibakar Bhattacharyya, "Layer-by-layer Assembled Membranes with Immobilized Porins", *RSC Advances*, 7(88): p. 56123-56136 (2017).
11. Hernandez, S., Ormsbee, L., S. Lei, E. Wang, and Bhattacharyya, D., "Functionalization of flat sheet and hollow fiber microfiltration membranes for water applications ",Invited Manuscript in **ACS journal on Sustainable Chemistry and Engineering**, 4, 907–918 (2016).
12. Davenport, D., Gui, M., Ormsbee, L., and Bhattacharyya, D., "Development of PVDF Membrane Nanocomposites via Various Functionalization Approaches for Environmental Applications", *POLYMERS*, Special Issue on Thin Films and Membranes 2015, 8(2), 32; doi:10.3390/polym8020032 (Jan 2016).
13. Hernandez, S, Saad, A., Ormsbee, L, and Bhattacharyya, D., "Nanocomposite and Responsive Membranes for Water Treatment. Emerging Membrane Technology for Sustainable Water Treatment", Book chapter, in *Book on Emerging Membrane Technology for Sustainable Water Treatment*, Edited by Nicholas Hankins and Rajindar Singh, Elsevier, (**March 2016**).

14. Bhattacharyya, D. and T. Schafer (Editors), **Book on “Responsive Membrane and Materials”**, John Wiley Publisher (Jan 2013).
15. Zahran, E., Bhattacharyya, D., Bachas, L.,” Reactivity of Pd/Fe Bimetallic Nanotubes in Dechlorination of Coplanar Polychlorinated Biphenyls”, *Chemosphere*, 91, 165-171 (April 2013).
16. Lewis, S., S. Datta, M. Gui, E.L. Coker, Huggins, F., Daunert, S., Bachas, L., Bhattacharyya, D., "Reactive Nanostructured Membranes for Water Purification", **Proc. Natl. Acad. Sci (PNAS)**, 108, 8577-8582 (2011).
17. Tan, T., Zheng, Z., Yu, D., Wang, R., et al and Bhattacharyya, D., “Graphene Oxide Quantum Dots Covalently Functionalized PVDF Membrane with Significantly-Enhanced Bactericidal and Antibiofouling Performance”, **Nature scientific Reports**, 6, Article number 20142, doi:10.1038/srep20142 (February 2016).
18. Hollman, A. M.; Bhattacharyya, D.; “Pore Assembled Multilayers of Charged Polypeptides in Microporous Membranes for Ion Separation”, *Langmuir*, 20, 5418-5424(2004).
19. Ritchie, S.M.C., Kissick, K.E., Bachas, L.G., Sikdar, S.K., Parikh, C., and Bhattacharyya, D., "Polycysteine and Other Polyamino Acid Functionalized Microfiltration Membranes for Heavy Metal Capture", *Environmental Science & Technology*, 35,3252-3258(2001).

#### RECENT AND CURRENT RESEARCH GRANTS

“Low Pressure Surface Modified Selective Separation Membranes for Contaminants Separations”, Honeywell Corporation, IL: PI: Bhattacharyya; CO-PI: Knutson, Rankin, Escobar, \$600,000, 8/1/18-7/31/22

“Functionalized and Graphene Membranes for Water Purification”, Chevron Corporation, Richmond, CA, PI, \$116,000, Dec 2017- Dec 2019); Funded “Photobacterial hydrogen production”, Southern Co, Birmingham, AL, PI (Bhattacharyya), CO-PI (Todd Hastings and DOO Young Kim) , \$80,000, (Nov 2017-Dec 2019)

“Chloro-Organic Degradation by Polymer Membrane Immobilized Iron-Based Particle systems” NIH-NIEHS-SRC, PI; CO-PI (L. Ormsbee), \$1.5 million (total SRP funding \$12 million), 4/1/2014-3/31/2019

“Nanoparticle Enhanced Near-IR Photobacterial Conversion of Organic Waste to Hydrogen”, NSF-EAGER, PI: D. Bhattacharyya, CO-PI: Todd Hastings and Doo young Kim, \$100,000, Jan 2017-Jan 2019

NSF EPSCoR RII Track 1: Powering the Kentucky Bioeconomy for a Sustainable Future, Overall PI: R. Andrews (total: \$24 million), D. Bhattacharyya-PI for the Membrane Pillar on “Bio-inspired Membranes for Energy and Environment”, Funding for Membrane Section \$6 million, 2014-July 2019

NSF REU Site: A Multidisciplinary Research Experience in Engineered Bioactive Interfaces, PI (Kim Anderson), CO-I, \$335,700; 2018-2021

#### US PATENTS

U.S.Patents (Inventor: Bhattacharyya; Co-inventors: Graduate students and other Associates, Ritchie, Lewis, Hestekin, Smuleac, Bachas, Xiao, Sikdar, Varma)

- (1)“Green Synthesis Nanocomposite Membranes”, U.S. Patent Number: 9375684; issued June 28, 2016 (D. Bhattacharyya, V. Smuleac, S. Sikdar, R. Varma)
- (2)“Chemical Processing Cell With Nanostructured Membranes”, US Patent Number, 9,174,173, issued Nov 3, 2015 (D. Bhattacharyya, S. Lewis, S. Datta)
- (3)“Water Purification Device And A Method Of Decontaminating A Water Supply”, U.S. Utility Patent Publication no. US20130105405 A1, revised claim submitted 7/29/2018 (D. Bhattacharyya, Li Xiao)
- (4)“Membrane-based sorbent for heavy metal sequestration”, US Patent No. US06103121, issued 8/15/2000
- (5)“Membrane-based sorbent for heavy metal sequestration”, Continuation in Part, US Patent No. US06139742, issued 10/31/2000
- (6)“Silica-based membrane sorbent for heavy metal sequestration”, U.S. Patent No. 06306301, issued 10/23/2001 (Bhattacharyya, Ritchie, et al)
- (7)“Preparing and regenerating a composite polymer and silica-based membrane”, U.S. Patent No. 06544418, issued 4/8/03 (Bhattacharyya, Ritchie, et al)
- (8)“Method of preparing a composite polymer and silica-based membrane”, U.S. Patent No. 06544419, issued 4/8/03 (Bhattacharyya, Ritchie, et al)
- (9)“Method of destroying hazardous organic compounds”, US Patent No. US05986160, issued 11/16/99

#### LIST OF RECENT COLLABORATORS

N. Meeks, Southern co; E. Hatakeyama, Chevron Co; S. Nemser, Compact Membrane Systems, Delaware; D. Sedlak, UC Berkeley; Ben Weaver, Nanostone Membrane Co, Oceanside, CA; Sikdar and Varma (US EPA, Cincinnati)

#### Student Thesis/ Dissertation Advisor (recent Ph.D’s and current students)

Ph.D. received: S. Hernandez, C. Colburn, M. Gui, Li Xiao; S. Lewis, A. Ladhe, A. Makhuni, V. Smuleac (Co-advisor: A. Butterfield), S. Datta, Y. Li, N. Meeks, D. Meyer, Y. Tee, and Jian Xu ; Current Ph.D. Students : Hongyi Wan, A. Aher, Colburn, Anthony Saad, A. Saiful, J. Craven, Michael Detisch (MSE student), Francisco Leiz; Kara Urfoma; also directed many undergraduate students for research (several of them received national awards on their research)