

**Biographical Sketch**  
**Evangelyn C. Alocilja, Ph.D., Professor**  
**Program Director, Nano-Biosensors Lab**  
**Member, National Academy of Inventors**

**Research Focus:**

Development of novel, affordable, and universally-accessible nano-biosensors and monitoring platforms for rapid, point-of-care/contact detection of infectious agents of concern to public health, food/water safety, and biosecurity.

**Appointments:**

Adjunct Professor, Department of Civil and Environmental Engineering,  
Ehime University, Japan, 2019-present  
Professor (courtesy), Department of Biomedical Engineering, MSU, 2019-present  
Professor, Department of Biosystems & Agricultural Engineering, MSU, 2011-present  
Professor (courtesy), Institute of International Health, MSU, 2009-present  
Associate Professor, Department of Biosystems and Agricultural Engineering, MSU, 2005-2011  
Assistant Professor, Department of Biosystems and Agricultural Engineering, MSU, 2000-2005  
Visiting Assistant Professor, Department of Agricultural Engineering, MSU, 1993-2000  
Research Consultant, International Rice Research Institute, Philippines, 1991-1993  
Management Consultant, Louis Berger International, Inc., 1991  
Visiting Scientist, Commonwealth Scientific and Industrial Research Organization, Australia 1992  
Visiting Assistant Professor, Department of Agricultural Engineering, MSU, 1988-1990  
Postdoctoral Research Associate, Department of Agricultural Engineering and Department of  
Systems Science and Electrical Engineering, MSU, 1987-1988

**Education:**

Ph.D., Systems Science/Electrical Engineering, Michigan State University	August 1987
M.S., Systems Science/Electrical Engineering, Michigan State University	December 1983
M.S. Soil Chemistry/Plant Physiology, University of the Philippines	March 1981
B.S. Chemistry, Silliman University, Dumaguete City, Philippines	March 1973

**Membership in Honor and Professional Societies:**

Sigma Xi, The Scientific Research Society; Phi Beta Delta, The Honor Society for International Scholars; American Association for the Advancement of Science (AAAS); American Chemical Society (ACS); American Society of Agricultural and Biological Engineers (ASABE); Institute of Biological Engineering (IBE); American Society for Engineering Education (ASEE); Institute of Electrical and Electronics Engineers (IEEE); International Association for Food Protection (IAFP)

**Highlight of Honors and Awards:**

- Recipient of 12 US patents
- 2019 William J. Beal Outstanding Faculty Award recipient, Michigan State University
- 2018, 2017, and 2013 Balik Scientist Award recipient in each year, Philippine Government
- 2017 US Manufacturing Innovation Leadership Award Finalist (national award)

- 2016 Undergraduate Research Faculty Mentor of the Year Award, Michigan State University
- 2015, Inducted to the National Academy of Inventors. The only female inductee from MSU.
- 2013 Outstanding Alumni Award, Silliman University, Philippines
- 2013 Science of Innovation: Anti-counterfeiting Devices – biosensor technology is 1 of 10 technologies selected to be featured by the National Science Foundation, US Patent and Trademark Office, and NBC Learn. Weblink: <https://www.nbclearn.com/innovation>
- 2012 Innovator of the Year Award, Michigan State University
- 2003 American Society for Engineering Education (ASEE) Award for Excellence in Teaching Materials and Methods in Biological and Agricultural Engineering.
- First Place award, 2001 Great Lakes Venture Quest Phase I Business Plan Competition.
- 1995 Withrow Teaching Excellence Award, College of Engineering, Michigan State University.

#### **Membership in Study Sections and Editorial Boards:**

- Editorial Board Member in the following journals: Diagnostics (2019-present), Nanomedicine (2018-present), Biosensors (2014-present), Nanobiosensors in Disease Diagnosis (2013-present), Open Journal of Applied Biosensor (2012-present)
- Membership in Study Section: NIH Instrumentation and Systems Development Study Section (2011-2015)

#### **Teaching Experience:**

Developed four courses contributing to the general Biosystems Engineering (BE) curriculum and the Biomedical Engineering (BME) concentration; Developed one course contributing to the university-level Entrepreneurship and Innovation Program; Lead faculty for the Biomedical Engineering Concentration in the department (initiated in 2009)

#### **Global Leadership – Integrating Global Talents to Address Global Needs:**

- Founder, Global Alliance for Rapid Diagnostics (GARD, ~200 members in 17 countries), 2016-present (<https://www.egr.msu.edu/alocilja/global-alliance-rapid-diagnostics-gard>)
- Co-founder, MSU-University of the Philippines Los Banos Center of Excellence for Southeast Asia (Philippines)
- Technology leader in the global validation of nano-biosensor technologies for rapid infectious disease detection, 2009-present

#### **Engagement with Diversity, Equity, and Inclusion:**

- Actively collaborating with faculty from Tuskegee University, a Historically Black University (HBCU), and Whittier College, a Hispanic Serving Institution (HSI); 2012-present
- Mentor to students in the Summer Research Opportunities Program (SROP), a gateway to graduate education at Big Ten Academic Alliance universities, whose goal is to increase the number of underrepresented students pursuing graduate study and research careers.
- Selected by the Department of Homeland Security to host a faculty-student team from a minority serving institution (MSI) through the DHS-MSI Program, 2010

### Peer-Reviewed Journal Articles (last 5 years):

1. Payumo JG<sup>3</sup>, Alocilja E<sup>3</sup>, Boodoo C, Luchini-Colbry K, Ruegg P, McLamore E, Vanegas D, Briceno RK, Castaneda-Sabogal A, Watanabe K, Gordoncillo MJ, Amalin D, Fernando L, Bhusal N. 2021. Next Generation of AMR Network. *Encyclopedia*. 2021; 1(3):871-892.
2. Sharief S, Chahal P, Alocilja EC<sup>3</sup>. 2021. Application of DNA sequences in anti-counterfeiting: Current progress and challenges. *International Journal of Pharmaceutics*, Volume 602, 1 June 2021, 120580
3. McLamore ES<sup>3</sup>, Alocilja EC, Gomes C, Gunasekaran S, Jenkins D, Li Y, Mao Y, Nugen S, Reyes De Corcuera J, Takhistov P, Tsyusko O, Cochran JP, Tzeng TR, Yoon JY, Yu C, Zhou A. 2021. A FEAST of Biosensors: Food, Environment, Agriculture, Science, Technology (FEAST) and Engineering in North America. *Biosensors and Bioelectronics*, 178, 24 p.
4. Victoria Morgan, Lisseth Casso-Hartmann, David Bahamon-Pinzon, Kelli McCourt, Robert G. Hjort, Sahar Bahramzadeh, Irene Velez-Torres, Eric McLamore, Carmen Gomes, Evangelyn C. Alocilja, Nirajan Bhusal, Sunaina Shrestha, Nisha Pote, Ruben Kenny Briceno, Shoumen Palit Austin Datta, and Diana C. Vanegas<sup>3</sup>. 2020. Sensor-as-a-Service: Convergence of Sensor Analytic Point Solutions (SNAPS) and Pay-A-Penny-Per-Use (PAPPU) Paradigm as a Catalyst for Democratization of Healthcare in Underserved Communities. *Diagnostics*, 10(1):22 (22pg).
5. Briceno RK, Sergeant SR, Benites SM, Alocilja EC<sup>3</sup>. 2019. Nanoparticle-based Biosensing Assay for Universally Accessible Low-Cost TB Detection with Comparable Sensitivity as Culture. *Diagnostics*, 9:222 (14p).
6. McLamore E<sup>3</sup>, Datta SPA, Morgan V, Cavallaro N, Kiker G, Jenkins D, Rong Y, Gomes C, Claussen J, Vanegas D, Alocilja E. 2019. SNAPS: Sensor Analytics Point Solutions for Detection and Decision Support Systems. *Sensors*, 19:4935 (22p).
7. Yrad FM, Catanares JM, Alocilja EC<sup>3</sup>. 2019. Visual Detection of Dengue-1 RNA Using Gold Nanoparticle-Based Lateral Flow Biosensor. *Diagnostics*, 9:74-88.
8. Franco, AJ<sup>1,3</sup>, Merca FE, Rodriguez MS, Balidion JF, Migo VP, Amalin DM, Alocilja EC<sup>3</sup>, Fernando LM. 2019. DNA-based electrochemical nanobiosensor for the detection of *Phytophthora palmivora* (Butler) Butler, causing black pod rot in cacao (*Theobroma cacao* L.) pods. *Physiological and Molecular Plant Pathology*. 107 (2019):14-20.
9. Bhusal N, Shrestha S, Pote N, and Alocilja E<sup>3</sup>. 2019. Nanoparticle-based Biosensing of Tuberculosis, an Affordable and Practical Alternative to Current Methods. *Biosensors*, 9(1):1-11.
10. Gordillo CM<sup>1</sup>, Gomez AV, Sanchez HP, Pryg K<sup>1</sup>, Shinnors J<sup>1</sup>, Murray N<sup>1</sup>, Munoz-SG, Bencomo AA, Gomez, AB, Janapa LG, Enriquez NR, Martin M, Romero NS, and Alocilja EC<sup>3</sup>. Magnetic Nanoparticle-based Biosensing Assay Quantitatively Enhances Acid-Fast Bacilli Count in Paucibacillary Pulmonary Tuberculosis. *Biosensors*, 8(4):128-141.
11. Alocilja EC<sup>3</sup>, Sharief SA<sup>1</sup>, Kriti N, and Chahal P. 2018. Combining Blockchain, DNA, and Nanotechnology for Product Authentication and Anti-Counterfeiting. *Brand Protection Professional*, (Dec. 20, 2018).
12. Matta LL<sup>1</sup> and Alocilja EC<sup>3</sup>. 2018. Carbohydrate Ligands on Magnetic Nanoparticles for Centrifuge-free Extraction of Pathogenic Contaminants in Pasteurized Milk. *J Food Protection*, 81(12):1941-1949. (Dec. 2018)
13. Zeeshan N<sup>1</sup>, Daya KS<sup>3</sup>, Tirumalai PS, and Alocilja E. 2018. Impedance and Magnetohydrodynamic Measurements for Label Free Detection and Differentiation of *E. coli*

- and *S. aureus* using Magnetic Nanoparticles. *IEEE Transactions on NanoBioscience*, 17(4):443-448. (Oct. 2018).
14. Matta LL<sup>1</sup>, Karuppuswami S, Chahal P, and Alocilja EC<sup>3</sup>. 2018. AuNP-RF Sensor: An innovative application of RF technology for sensing pathogens electrically in liquids (SPEL) within the food supply chain. *Biosensors and Bioelectronics*, 111:152-158.
  15. Matta LL<sup>1</sup>, Harrison J, Deol G, and Alocilja EC<sup>3</sup>, 2018. Carbohydrate-functionalized Nano-Biosensor for Rapid Extraction of Pathogenic Bacteria Directly from Complex Liquids with Quick Detection Using Cyclic Voltammetry. *IEEE Transactions on Nanotechnology*, 17(5):1006-1013.
  16. Matta LL<sup>1</sup> and Alocilja EC<sup>3</sup>. 2018. Emerging nano-biosensing with suspended MNP microbial extraction and EANP labeling. *Biosensors and Bioelectronics*, 117:781-793.
  17. Karuppuswami S, Matta LL<sup>1</sup>, Alocilja EC, and Chahal P<sup>3</sup>. 2018. A wireless RFID compatible sensor tag using gold nanoparticle markers for pathogen detection in the liquid food supply chain. *IEEE Sensors Letters*, 2(2), 4pg.
  18. Baetsen-Young AM, Vasher M<sup>1</sup>, Matta L<sup>1</sup>, Colgan P, Alocilja E<sup>3</sup>, Day B<sup>3</sup>. 2018. Direct colorimetric detection of unamplified pathogen DNA by dextrin-capped gold nanoparticles. *Biosensors and Bioelectronics*, 101:29-36.
  19. Luo Y<sup>1</sup> and Alocilja<sup>3</sup>. 2017. Portable nuclear magnetic resonance biosensor and assay for a highly sensitive and rapid detection of foodborne bacteria in complex matrices. *J Biological Engineering*, 11:14, 8 p.
  20. Lim D<sup>3</sup>, Villame RG, Quiñones GJ, de Vera D, Notorio R, Fernando L, Alocilja E. 2017. Alocilja Magnetic Nanoparticles capture *Escherichia coli* O157:H7 isolates. *Philippine Journal of Pathology Open Access*, 2(2): 47-49.
  21. Contreras J<sup>1,3</sup>, Fernando L, Alocilja E, Salazar F, Bacay B. 2016. Fabrication of a nanoparticle-based sensor for the detection of dengue virus-3 in *Aedes aegypti*. *International Journal of Sciences: Basic and Applied Research*, 26(3): 138-157.
  22. Wang Y<sup>1</sup>, Mazurek G, and Alocilja EC<sup>3</sup>. 2016. Measurement of Interferon gamma Concentration Using an Electrochemical Biosensor. *Journal of the Electrochemical Society*, 163(5), B1-B6.
  23. Yuan M<sup>1</sup>, Alocilja EC, and Chakrabartty S<sup>3</sup>. 2016. Self-powered wireless Affinity-based biosensor based on integration of paper-based microfluidics with self-assembling RFID Antennas. *IEEE Transactions on Biomedical Circuits and Systems*, 10(4), 799-806.
  24. Alocilja EC<sup>3</sup>, Jain P<sup>1</sup> and Pryg K<sup>1</sup>. 2016. Immunosensor for Rapid Extraction/Detection of Enteric Pathogens. *Technology*, 4(3), 194-200 (September 2016).
  25. Fernando L<sup>1,3</sup>, Vasher M<sup>1</sup>, Alocilja EC. 2015. A DNA-based nanobiosensor for the rapid detection of the dengue virus in mosquito. *International Journal of Medical, Health, Biomedical, Bioengineering and Pharmaceutical Engineering*, 9(12), 818-821. (missed to report last year's annual report due to late release).
  26. Cloutier BC<sup>1,3</sup>, Cloutier AK<sup>1</sup>, Trinidad L<sup>1</sup>, Alocilja EC. 2015. Culture Age on Evaluation of Electrically Active Magnetic Nanoparticles as Accurate and Efficient Microbial Extraction Tools. *Open Journal of Applied Biosensors*, 1, 36-43.
  27. Cloutier BC<sup>1,3</sup>, Cloutier AK<sup>1</sup>, Alocilja EC. 2015. Optimization of Electrically Active Magnetic Nanoparticles as Accurate and Efficient Microbial Extraction Tools. *Biosensors*, 5, 69-84.

28. Yuan M<sup>1</sup>, Chahal P, Alocilja EC, Chakrabartty S<sup>3</sup>. Wireless Biosensing Using Silver-Enhancement Based Self-assembled Antennas in Passive Radio Frequency Identification (RFID) Tags. *IEEE Sensors Journal*, 15(8), 4442-4450.
29. Wang Y<sup>1</sup> and Alocilja EC<sup>3</sup>. 2015. AuNP-labeled Biosensor for Rapid and Sensitive Detection of Bacterial Pathogens. *Journal of Biological Engineering*, 9, 16 (7 pg).
30. Wang Y<sup>1</sup> and Alocilja EC<sup>3</sup>. 2015. Electrochemical Immunosensor Using Nanoparticle-based Signal Enhancement for Escherichia coli O157:H7 Detection. *IEEE Sensors Journal*, 15(8), 4692-4699.
31. Luka G, Ahmadi A, Najjaran H, Alocilja E, DeRosa M, Wolthers K, Malki A, Aziz H, Althani A, Hoorfar M<sup>3</sup>. 2015. Microfluidics integrated biosensors: A leading technology towards lab-on-a-chip and sensing applications. *Sensors*, 15(12), 30011-30031.

For a complete listing of publications, please refer to <http://www.egr.msu.edu/alocilja>

Legend for superscript notation: 1=student or postdoc; 3 =corresponding author

**h-index: *h-index*: 42, i10-index: 91, Citations: 6,469**