

Clayton S. Jeffryes

Assistant Professor

Dan F. Smith Department of Chemical Engineering

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Research Positions

- 2015- Assistant Professor, Dan F. Smith Department of Chemical Engineering, Lamar University
- 2012 - 15 Research Fellow, Chargé de Recherches FNRS (Belgian National Science Foundation)
- 2009 - 12 Post-Doctoral Researcher, Catholic University of Louvain (marine biotechnology and engineering)
- 2004 - 09 Graduate Research Assistant, Ph.D., Oregon State University (nanobiotechnology)
- 2003 - 04 Graduate Research Assistant, MS, Oregon State University (algal bioprocess engineering)
- 2001 Undergraduate Research Assistant, Oregon State University, Bioengineering (protein separation)

Education – Degrees

- 2009 Ph.D. Chemical Engineering, Oregon State University, May 26, 2009. Title: Biological insertion of nanostructure germanium and titanium oxides into diatom biosilica.
Permanent link: <http://hdl.handle.net/1957/12005>, Advisor: Prof. Gregory Rorrer
Research focus: Bioprocess strategies for the fabrication and characterization of hierarchically structured metal oxide alloys and composites based on marine algal nanobiotechnology.
- 2004 M.S. Chemical Engineering, Oregon State University
- 2002 B.S. BioEngineering (Dept. of Chemical, Biological and Environmental Engr.), Oregon State University

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Google Scholar Statistics <http://scholar.google.be/citations?user=2wtMf70AAAAJ&hl=en>

Peer-reviewed first author
Publications: 9

Peer-reviewed corresponding
author Publications: 16

Citations: 1374

H-index: 20

Peer Reviewed Publications

- 37. Rahman, A., Kumar, S., Bafana, A., Lin, J., Dahoumane, S.A., **Jeffryes, C. (Corresponding Author)** “A mechanistic view of the light-induced synthesis of silver nanoparticles using extracellular polymeric substances of *Chlamydomonas reinhardtii*.” *Molecules*. 24, 3506 (2019) <https://doi.org/10.3390/molecules24193506>
- 36. Kumar, S.V., Bafana, A., Pawar, P., Faltane, M., Rahman, A., Dahoumane, S.A., Kucknoor, A., **Jeffryes, C. (Corresponding Author)** “Optimized production of antibacterial copper oxide nanoparticles in a microwave-assisted synthesis reaction using response surface methodology.” *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. 573, 170-178 (2019).
- 35. Rahman, A., Kumar, S., Bafana, A., Dahoumane, S.A., **Jeffryes, C. (Corresponding Author)** “Individual and combined effects of extracellular polymeric substances and whole cell components of *Chlamydomonas reinhardtii* on silver nanoparticle synthesis and stability.” *Molecules*. 24, 956 (2019)
- 34. Rahman, A., Kumar, S., Bafana, A., Dahoumane, S.A., **Jeffryes, C. (Corresponding Author)** “Biosynthetic conversion of Ag^+ to highly stable Ag^0 nanoparticles by wild type and cell wall deficient strains of *Chlamydomonas reinhardtii*.” *Molecules*. 24, 98 (2019).

33. Niknejad, P., Venneti, S., Vasefi, M., **Jeffryes, C.**, Barzegaran, M.R. "An electrochemically assisted AC/DC microgrid configuration with waste water treatment capability." *Electric Power Systems Research*. 162, 207-219 (2018).
32. Bafana, A., Kumar, S.V., Temizel-Sekeryan, S., Dahoumane, S.A., Haselbach, L., **Jeffryes, C. (Corresponding Author)** "Evaluating microwave-synthesized silver nanoparticles from silver nitrate with life cycle assessment techniques." *Science of the Total Environment*. 636, 936-943 (2018).
31. Kumar, S.V., Bafana, A.P., Pawar, P., Rahman, R., Dahoumane, S.A., **Jeffryes, C. (Corresponding Author)** "High conversion synthesis of < 10 nm starch-stabilized silver nanoparticles using microwave technology." *Nature Scientific Reports*. 8, 5106 (2018).
30. Karimi, E., Yazdian, F., Rasekh, B., **Jeffryes, C.**, Shahmoradi, S., Sepahi, A.A., Rashedi, H., Omid, M., Azizi, M., Bihendi, H.E. "DBT Desulfurization by decorating bacteria using modified carbon nanotubes" *Fuel*. 216, 787-795 (2018).
29. Yu, G., Lu, Y., Guo, J. Patel, M., Bafana, A., Wang, X., Qiu, B., **Jeffryes, C.**, Wei, S., Guo, Z., Wujcik, E. "Carbon nanotubes, graphene and their derivatives for heavy metal removal" *Advanced Composites and Hybrid Materials*. 1, 56-78 (2018).
28. Dahoumane, S.A., **Jeffryes, C.**, Mechouet, M., Agathos, S.N. "Biosynthesis of inorganic nanoparticles: a fresh look at the control of shape, size and composition." *Bioengineering*. 4, 14 (2017).
27. Karimi, E., **Jeffryes, C.**, Yazdian, F., Sepahi, A.A., Rasekh, B., Rashedi, H., Omid, M., Ebrahim-Habibi, M.-B., Ashrafi, S.J. "DBT desulfurization by decorating rhodococcus erythropolis IGTS8 using magnetic Fe₃O₄ nanoparticles in bioreactor." *Engineering in Life Sciences*. 17, 528-535 (2017).
26. Dahoumane, S.A., (Co-corresponding author), Mechouet, M., Wijesekera, K., Filipe, C.D.M., Sicard, C., Bazylinski, D.A., **Jeffryes, C. (Co-Corresponding Author)** "Algae-mediated biosynthesis of inorganic nanomaterials as a promising route in nanobiotechnology - a review." *Green Chemistry*. 19, 552-587 (2017).
25. Gautam, S., Kashyap, M., Gupta, S., Kumar, V., Schoefs, B., Gordon, R., **Jeffryes, C.**, Joshi, K.B., Vinayak, V. "Metabolic engineering of TiO₂ nanoparticles in *Nitzschia palea* to form diatom nanotubes: an ingredient for solar cells to produce electricity and biofuel." *RCS Advances*. 6, 97276-97284 (2016).
24. Dahoumane, S.A., Wujcik, E.K., Jeffryes, C. (**Corresponding Author**) "Noble metal, oxide and chalcogenide-based nanomaterials from scalable phototrophic culture systems." *Enzyme and Microbial Technology*. 95, 13-27 (2016).
23. Grama, B.S., Agathos, S., **Jeffryes, C. (Corresponding Author)** "Balancing photosynthesis and respiration increases microalgal biomass productivity during photoheterotrophy on glycerol." *ACS Sustainable Chemistry & Engineering*. 4(3), 1611-1618 (2016).
22. **Jeffryes, C.**, Severi, V., Delhay, A., Urbain, B., Grama, B.S., Agathos, S., "Energy conversion in a novel, internally illuminated annular-plate airlift photobioreactor." *Engineering in Life Sciences*. 16(4), 348-354 (2016).
21. Pérez-López, P., **Jeffryes, C.**, Agathos, S.N., Feijoo, G., Rorrer, G., Moreira, M.T. Environmental life cycle optimization of essential terpene oils by the macroalga *Octodes secundiramea*." *Science of the Total Environment*. 542, 292-305 (2016).
20. **Jeffryes, C. (Corresponding Author)**, Li, J., Agathos, S. "Dimensionless equations to describe microalgal growth in a planar cultivation system." *Biotechnology Letters*. 37, 2167-2171 (2015).
19. **Jeffryes, C. (Corresponding Author)**, Agathos, S., Rorrer, G. "Biogenic nanomaterials from photosynthetic microorganisms." *Current Opinion in Biotechnology*. 33, 23-31 (2015).

18. Li, J., Stamato, M., Velliou, E., **Jeffryes, C.**, Agathos, S. "Design and Characterization of an Airlift Flat Panel Photobioreactor for Algal Cultivation." *Journal of Applied Phycology*. 27, 75-86 (2015).
17. Grama, B.S., Chader, S., Khelifi, D., Stenuit, B., **Jeffryes, C.**, Agathos, S. "Characterization of fatty acid and carotenoid production in an *Acutodesmus* microalga isolated from the Algerian Sahara." *Biomass and Bioenergy*. 69, 265-275 (2014).
16. Grama, B.S., Delhay, A., Chader, S., Khelifi, D., Agathos, S.N., **Jeffryes, C. (Corresponding Author)**. "Canthaxanthin, astaxanthin and adonixanthin production from a *Dactylococcus* microalga in a new flat plate airlift photobioreactor." *Communications in Agricultural and Applied Biological Sciences*. 79(1), 65-70 (2014).
15. Grama, B.S., Chader, S., Khelifi, D., Agathos, S., **Jeffryes, C. (Corresponding Author)**. "Induction of Canthaxanthin Production in a *Dactylococcus* microalga isolated from the Algerian Sahara." *Bioresource Technology*. 151, 297-305 (2014).
14. Pérez-López, P., González-García, S., **Jeffryes, C.**, Agathos, S., McHugh, E., Walsh, D., Murray, P., Moane, S., Feijoo, G., Moreira, M.T. "Life cycle assessment of the production of the red antioxidant carotenoid astaxanthin by microalgae: from lab to pilot scale." *Journal of Cleaner Production*. 64, 332-334 (2014).
13. Murray, P.M., Moane, S., Collins, C., Beletskaya, T., Thomas, O.P., Duarte, A.W.F., Nobre, F.S., Owoyemi, I.O., Pagnocca, F.C., Sette, L.D., McHugh, E., Causse, E., Perez-Lopez, P., Feijoo, G., Moreira, M.T., Rubiolo, J., Leiros, M., Botana, L.M., Pinteus, S., Alves, C., Horta, A., Pedrosa, R., **Jeffryes, C.**, Agathos, S.N., Allewaert, C., Verzeen, A., Vyverman, W., Laptev, I., Sineosky, S., Bisio, A., Manconi, R., Ledda, F., Marchi, M., Prontzato, R., Walsh, D.J. "Sustainable production of biologically active molecules of marine based origin." *New Biotechnology*. 30(6), 839-850 (2013).
12. **Jeffryes, C. (Corresponding Author)**, Rosenberger, J., Rorrer, G. "Fed-batch cultivation and bioprocess modeling of *Cyclotella* sp. for enhanced fatty acid production by controlled silicon limitation." *Algal Research*. 2(1), 16-27 (2013).
11. **Jeffryes, C. (Corresponding Author)**, Campbell, J., Li, H., Jiao, J., Rorrer, G. "The Potential of Diatom Nanobiotechnology for Applications in Solar Cells, Batteries, and Electroluminescent Devices." *Energy & Environmental Science*. 4(10), 3930-3941 (2011).
10. Gale, D., **Jeffryes, C.**, Gutu, T., Jiao, J., Chang, C.-H., Rorrer, G.L. "Thermal annealing activates amplified photoluminescence of germanium metabolically doped in diatom biosilica." *Journal of Materials Chemistry*. 21(29), 10658-10665 (2011).
9. Gutu, T., Gale, D.K., **Jeffryes, C.**, Wang, W., Chang, C.-H., Rorrer, G.L., Jiao, J. "Electron Microscopy and Optical Characterization of Cadmium Sulphide Nanocrystals Deposited on the Patterned Surface of Diatom Biosilica." *Journal of Nanomaterials*. Volume 2009, Article ID 860536, DOI:10.1155/2009/860536.
8. **Jeffryes, C.**, Gutu, T., Jiao, J., Rorrer, G.L. "Metabolic Insertion of Nanostructured TiO₂ into the Patterned Biosilica of the Diatom *Pinnularia* sp. by a Two-Stage Bioreactor Cultivation Process." *ACS Nano*, 2, 2103-2112 (2008).
7. **Jeffryes, C.**, Gutu, T., Jiao, J., Rorrer, G.L. "Peptide-Mediated Deposition of Nanostructured TiO₂ into the Periodic Structure of Diatom Biosilica." *Journal of Materials Research*, 23, 3255-3262 (2008).
6. **Jeffryes, C.**, Solanki, R., Rangineni, Y., Wang, W., Chang, C.-H., Rorrer, G.L. "Electroluminescence and Photoluminescence from Diatom Frustules Containing Metabolically Inserted Germanium." *Advanced Materials*, 20, 2633-2637 (2008). Featured article in: Materials Science: Diatomic Power. *Nature*, Research Highlights, 453, 1146 (2008).

5. **Jeffryes C.**, Gutu, T., Jiao, J., Rorrer, G. L. “Two-Stage Photobioreactor Process for the Metabolic Insertion of Nanostructured Germanium into the Silica Microstructure of the Diatom *Pinnularia* sp.” *Materials Science & Engineering, C: Biomimetic and Supramolecular Systems*, 28, 107-118 (2008).
4. Lee, D.-H, Wang, W., Gutu, T., **Jeffryes, C.**, Rorrer, G.L., Jiao, J., Chang, C.-H. “Biogenic silica based $\text{Zn}_2\text{SiO}_4\text{:Mn}^{2+}$ and $\text{Y}_2\text{SiO}_5\text{:Eu}^{3+}$ phosphor layers patterned by ink-jet printing process.” *Journal of Materials Chemistry*, 18, 3633-3635 (2008).
3. Lee, D.-H., Gutu, T., **Jeffryes, C.**, Rorrer, G. L., Jiao, J., Chang, C.-H. “Nanofabrication of Green Luminescent $\text{Zn}_2\text{SiO}_4\text{:Mn}$ using Biogenic Silica.” *Electrochemical and Solid-State Letters*, 10, K13-K16 (2007).
2. Gutu, T., Lee, D.-H. **Jeffryes, C.**, Rorrer, G.L., Chang, C-H., Jiao, J. “Electron Microscopy Study of Zinc Silicate Coated Diatom Frustules.” *Proceedings of Microscopy and Microanalysis 2006*, Vol.12, Supplement 2, 730-731 (2006).
1. Rorrer, G.L., Chang, C.-H., Liu, S.-H, **Jeffryes, C.**, Jiao, J., Hedberg, J.A. “Biosynthesis of Silicon-Germanium Oxide Nanocomposites by the Marine Diatom *Nitzschia frustulum*.” *Journal of Nanoscience and Nanotechnology*, 5, 41-49 (2005).

Book Chapters

2. Lu, Y., Doan, L., Bafana, A., Yu, G., **Jeffryes, C.**, Benson, T., Wei, S., Wujcik, E.K. “*Multifunctional nanocomposite sensors for environmental monitoring.*” In: Song, K., Liu, C., Guo, J., (eds.), *Polymer-based multifunctional nanocomposites and their applications*. Elsevier, pp. 157-174 (2019).
1. Grama, B.S., Delhay, A., Agathos, S.N., **Jeffryes, C (Corresponding Author)**. “ *β -carotene and other carotenoids and pigments from microalgae.*” In: Vandamme, E. (ed.), *Biotechnology of vitamins, pigments and growth factors*. Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim. pp. 265-286 (2016)

Peer Reviewed Conference Proceedings – reverse chronological order

5. Li, H. **Jeffryes, C.**, Gutu, T., Jiao, J., Rorrer, G.L. “Peptide-Mediated Deposition of Nanostructured TiO_2 into the Periodic Structure of Diatom Biosilica and its Integration into the Fabrication of a Dye-Sensitized Solar Cell Device.” In: *Synthesis of Bioinspired Hierarchical Soft and Hybrid Materials*, F. Meldrum, S. Yang, N. Kotov, C. Li (Eds.), Materials Research Society (MRS) Symposium Proceedings, 1189E, MM02-05.1-8 (2009).
4. Gutu, T., **Jeffryes, C.**, Wang, W., Chang, C.-H., Rorrer, G., Jiao, J. “Structural and Electrical Characterization of Diatom *Pinnularia* sp. Biosilica Coated with CdS Thin Film.” In: *Structure-Property Relationships in Biomineralized and Biomimetic Composites*, D. Kisailus, L. Estroff, W. Landis, P. Zavattieri, H.S. Gupta (Eds.), Materials Research Society (MRS) Symposium Proceedings 1187, KK05-20.1-4 (2009).
3. Gutu, T., Jiao, J., **Jeffryes, C.**, Chang, C.-H., Rorrer, G.L. “Electron Microscopy Analysis of CdS Coated Diatom Cell Walls.” *Microscopy and Microanalysis : the Official Journal of Microscopy Society of America, Microbeam Analysis Society, Microscopical Society of Canada.*, 14 Suppl 2, 360-1 (2008).
2. Gutu, T., Wu, J., **Jeffryes, C.**, Chang, C.-H, Rorrer, G., Jiao, J. “Dual Beam Focused Ion Beam and Transmission Electron Microscopies of Nanoscale Sectioned Diatom Frustules.” *Proceedings of Microscopy and Microanalysis*, Vol. 13, Suppl 2, 678 CD-679 CD (2007).
1. Liu, S., **Jeffryes, C.**, Rorrer, G.L., Chang, C.-H., Jiao, J., Gutu, T. “Blue Luminescent Biogenic Silicon-Germanium Oxide Nanocomposites.” *Materials Research Society (MRS) Symposium Proceedings*, 873E, K1.4.1-6 (2005).

Teaching and Mentoring

Postdoctoral Supervision

1. Amar, Rawaa. Project “Volcanic Ash in Ocean” (VAIO). Catholic University of Louvain, June 2014 – August 2015.

PhD thesis supervision

4. PhD. Dissertation, “Biosynthetic conversion of Ag^+ to colloiddally stable Ag^0 nanoparticles by *Chlamydomonas reinhardtii*.” Rahman, Ashiqur. Lamar, University, Beaumont, TX, Nov 1, 2019
3. PhD. Dissertation, “Sustainable, microwave synthesis of inorganic nanoparticles and their applications.” KUMAR, Shishir. Lamar, University, Beaumont, TX, July 24, 2019
2. PhD Dissertation, “Nanomaterials: Synthesis, application and sustainability.” BAFANA, Adarsh. Lamar University, Beaumont, TX, July 22, 2019.
1. PhD Dissertation Co-Adviser, “Production of high value-added molecules by microalgae isolated from the Algerian Sahara: optimization of culture conditions and induction parameters.” GRAMA, Samir, Catholic University of Louvain and University of Constantine 1, Constantine, Algeria. June 17, 2014.

MS thesis supervision

18. MS Thesis, “Microwave-assisted synthesis to produce Au-Ag alloy nanoparticles.” FALTANE, Meghana. Lamar University. August 2019.
17. MS Thesis, “Demulsification of wastewater by microwave radiation.” OUATTARA, Kaledia. Lamar University. July 2019.
16. MS Thesis, “Optimization of biogenic oxygen generation by microalgal cell cultures within enclosed systems.” KAABIPOUR, Sina. Lamar University. November 2018.
15. MS Thesis, “Synthesis of silver nanoparticles using microalgae in the multi-vessel reactor.” NAMEDE, Tushar. Lamar University. April 2018.
14. MS Thesis, “Fast green synthesis of inorganic nanoparticles using microwave technology.” PAWAR, Prasad. Lamar University. November 2017.
13. MS Thesis, “Characterization of oxygen production in algal suspension culture by dimensionless equations.” Kouchi, Ali Rashidi. Lamar University. August 2017.
12. MS Thesis, “A modeling and experimental study of the kinetics of intracellular synthesis of silver nanoparticles using *Chlamydomonas reinhardtii*.” MAI, Tsai-Nan. Lamar University. August 2017.
11. MS Thesis, “Metal cation uptake and reduction kinetics in microalgal cell culture.” KARE, Anudeep. Lamar University. November 2016.
10. MS Thesis, “Carotenogenesis of microalgal cell cultures in response to elevated O_2 and antioxidative enzyme cofactor limitation.” LE JEUNE d’ALLEGEERSHECQUE, Alexandre. Catholic University of Louvain. Completed August 2015.

9. MS Thesis, “Bioprocess modeling of the continuous production of macroalgal tissue cultures in photobioreactors.” LATIERS, Marion. Catholic University of Louvain. Completed August 2015.
8. MS Thesis, (Co-supervisor). “Measurement and modeling of recombinant protein production from *Chlamydomonas reinhardtii* encapsulated in organic-inorganic hybrid beads.” RANDEK, Judith. Catholic University of Louvain and Budapest University of Technology and Economics, Budapest, Hungary. Dec. 2015.
7. MS Thesis, “Production of chitin and lipids from microalgal cell cultures under silicon stress” ROUSSEAU, Pierre-Baptiste. Catholic University of Louvain. Completed June 2015.
6. MS Thesis, “Optimization of a bioprocess for the production of carotenoids by microalgae.” DELHAYE, Antoine. Catholic University of Louvain. Completed June 2014.
5. MS Thesis, “Characterization of a novel, internally illuminated airlift photobioreactor.” SEVERI, Veronica. Catholic University of Louvain and University of Bologna, Bologna, Italy. Completed March 2014.
4. MS Thesis (co-supervision), “Design and testing of a flat panel airlift photobioreactor.” STAMATO, Marissa. Catholic University of Louvain and University of Bologna, Bologna, Italy. Completed August 2013.
3. MS Thesis, “Continuous cultivation of *Ochthodes secundiramea* plantlets in photobioreactors.” URBAIN, Briec. Catholic University of Louvain. Completed August 2012.
2. MS Thesis, “Optimized production of high-value carotenoids by the mixotrophic cultivation of *Haematococcus pluvialis* and *Scenedesmus obliquus* using biodiesel waste glycerol as a carbon source.” CHRISTIANE, Diego. Catholic University of Louvain. Completed June 2011.
1. MS Thesis, “Study of the production conditions and industrial commercialization of astaxanthin from the algae *Haematococcus pluvialis* by airlift helical coil photobioreactors with the aim of creating a UCL spin-off.” STAS, Sebastien. Catholic University of Louvain. Completed August 2010.

Other thesis

1. BSc Honors Thesis, “Fundamental measurements of photosynthetic parameters of *Dunaliella tertiolecta* in response to iron starvation.” ALLIJI, Khatija. Catholic University of Louvain and University of Portsmouth, Portsmouth, UK. Completed April 2014.

Undergraduate research (with funding)

6. Lamar Office of Undergraduate Research, “Microwave-assisted separation of fuel feedstocks from waste streams.” Cleveland Elijah Keal, 2019-2020.
5. Lamar Office of Undergraduate Research, “Conversion of corn ethanol waste to value-added products by algae.” Karen Figueroa, 2019-2020.
4. McNair Schloars, Cleveland Elijah Keal. 2019
3. Lamar Office of Undergraduate Research, “Preparation & characterization of electrospun algal biopolymers and synthetic polymer blend nanofibers.” Zhen Wei Ooi, 2018-2019.
2. Lamar Office of Undergraduate Research, “Testing of 3D hybrid tissues.” Julia Lin. 2017-2018

1. Lamar Office of Undergraduate Research, “Biosynthesis of colloidal stabilizing agents for nanotechnology.” Zhen Wei Ooi. 2017-2018

Courses taught

9. Thermodynamics I, Lamar University CHEN 2374 (Sp 18, Sp 19)
8. Undergraduate Professional Seminar, Lamar University CHEN 2140 (Sp 18, F 18, F 19)
7. Momentum Transfer, Lamar University CHEN3311 (Su 16, F 16, Su 17, F 17, Su 18, F 18, S 19, F 19)
6. Graduate Transport Phenomena CHEN5302 (Su 17, Sp 19).
5. Heat Transfer, Lamar University CHEN3320 (Sp 16, Sp 17, Su 18)
4. Graduate Mass Transfer, Lamar University CHEN6301 (F 15)
3. Chemical Engineering Project and Industrial Design (LBIRC2201). *Université catholique de Louvain*, fall semester, 2014. (Equivalent to Capstone Project in the USA)
2. Biochemical and Microbial Engineering (LBIRC2108). *Université catholique de Louvain*, Winter/Spring Semester, 2011. Text : *Bioprocess Engineering Principles* (Doran, P.).
1. Bioreactor engineering laboratory (BIOE457). Oregon State University, Spring 2004. Text: *Biochemical Engineering* (Blanch and Clark).

Project Funding

12. Copper oxide nanoparticles as an antibacterial “Mousetrap” to combat bacterial panicle blight in rice. Lamar University REG. **Principle Investigator**. \$5000. (11/19 – 10/20).
11. MRI – Acquisition of a Flow Cytometer at Lamar University. National Science Foundation (NSF). **Co-Principle Investigator**. \$321,996. (10/19 – 9/21).
10. Prospective commercialization of a low-cost, chemical-free antibacterial wipe. Center for Innovation, Commercialization and Entrepreneurship. **Principle Investigator**. \$3000 (6/2019-9/2019)
9. Three-Dimensional phototroph-enabled tissues (3DPET). State of Texas. **Principle Investigator**. \$5000. (9/2017-8/2018)
8. 3D printed device for characterizing mixed trophic systems. Center for Innovation, Commercialization and Entrepreneurship. **Principle Investigator**. \$3000. (6/2017-9/2017)
7. MRI - Acquisition of a Transmission Electron Microscope (TEM) at Lamar University. National Science Foundation (NSF). **Co-Principle Investigator**. Award 1625411, \$525,000. (9/2016 – 8/2017)
6. PhycoClean. Center for the Advances in Air and Water Quality (CAWAQ). **Principle Investigator**. \$25 000. (3/2016 - 6/2017)
5. Volcanic Ash in Oceans (VAIO). call “Credits and Projects F.R.S.-FNRS 2013” - The photosynthetic apparatus of marine phytoplankton as a bioindicator for dissolved Fe derived from volcanic ash. €40 000 lab funding plus shared post-doctoral researcher (€240 000 total project) **Co-Principle Investigator**. (7/2014 - 6/2016)
4. Photosynthetic Biorefinery – Fundamental Principles. Candidature for Belgian National Research Fellow (Chargé de Recherches de FNRS). Fully funded three year fellowship plus € 15 000 operating budget. **Principle Investigator**. (10/2012 – 9/2015)
3. Biomimetic Cell and Enzyme Entrapment. Call: Grant for Researchers F.R.S.-Fonds de la Recherche Scientifique (Belgian National Science Foundation). € 39 930. **Primary Author and Co-PI**. (2011)

2. Walloon Region project FOTOBIOIMAT. “Development of hybrid materials for the encapsulation of photosynthetic algae for the production of high value added metabolites in photobioreactors”. € 444,850 departmental funding (€1,872,470 total project). Co-Author. (2/2012 - 1/2016)
1. European Union Framework 7-KBEE-2010-4 Collaborative Project, “Sustainable Production of Biologically Active Molecules of Marine Based Origin (BAMMBO)”. €639,680 departmental funding (€ 3,200,000 total project). Co-author. (4/2011 – 3/2014)

Non-Refereed Conference Proceedings and Presentations

Invited and Peer-Selected Conference Presentations (as speaker or corresponding author)

20. Kumar, S.V., Bafana, A., Dahoumane, S.A., Haselbach, L., **Jeffryes, C. (Corresponding and Speaker)**. “Evaluating microwave-synthesized copper oxide nanoparticles from copper chloride with antimicrobial properties using life cycle assessment techniques.” *2019 AIChE Annual Meeting*, Presentation 241c, Orlando, FL, USA, Nov 12, 2019.
19. Bafana, A., Kumar, S.V., Pawar, P., Rahman, A., Dahoumane, S.A., **Jeffryes, C. (Corresponding)**. “Preparation of microalgal EPS/PVA blend nanofibers for waste water remediation.” *2018 AIChE Annual Meeting*, Presentation 729g, Pittsburgh, PA, USA, Nov 2, 2018.
18. Kumar, S.V., Bafana, A., Pawar, P., Dahoumane, S.A., **Jeffryes, C. (Corresponding)**. “Optimized synthesis of copper oxide nanomaterials using a simple microwave-assisted method.” *2018 AIChE Annual Meeting*, Presentation 425f, Pittsburgh, PA, USA, Oct. 30, 2018.
17. Kaabipour, S., Lin, J. **Jeffryes, C. (Corresponding)**. “Optimization of microalgal oxygen evolution within planar cultivation systems.” *2018 AIChE Annual Meeting*, Presentation 68c, Pittsburgh, PA, USA, Oct. 29, 2018.
16. Rahman, A., Nemade, T., Kumar, S.V., Bafana, A., Dahoumane, S.A., **Jeffryes, C. (Corresponding)**. “Optimizing process parameters for stable nanoparticle production in a multi-vessel reactor system using microalgae.” *2018 AIChE Annual Meeting*, Presentation 223b, Pittsburgh, PA, USA, Oct. 29, 2018.
15. Kumar, S.V., Bafana, A., Pawar, P.P., Rahman, A., Dahoumane, S.A., **Jeffryes, C. (Corresponding)**. “Microwave-assisted synthesis of silver nanoparticles using glucose and starch.” *2017 AIChE Annual Meeting*, Presentation 25f, Minneapolis, MN, USA, Oct. 29, 2017.
13. Bafana, A., Kumar, S.V., Rahman, A., Pawar, P.P., Dahoumane, S.A., **Jeffryes, C. (Corresponding)**. “Synthesis of silver nanoparticles using extracellular polymeric substances from *Cosmarium* sp. using microwave.” *2017 AIChE Annual Meeting*, Presentation 386d, Minneapolis, MN, USA, Oct. 31, 2017.
12. Rahman, A., Kumar, S.V., Mai, T.-N., Bafana, A., Pawar, P.P., Dahoumane, S.A., **Jeffryes, C. (Corresponding)**. “Kinetics, yield and rate limiting processes in the biosynthesis of colloidal silver nanoparticles by a fresh water microalga.” *2017 AIChE Annual Meeting*, Presentation 25e, Minneapolis, MN, USA, Oct. 31, 2017.
11. **Jeffryes, C. (speaker)**. “Nanomaterials and high value products from phototrophic cell cultures.” *Invited speaker, King Abdullah University of Science and Technology (KAUST) Invited Research Seminar Series*. Thuwal, Saudi Arabia, May 14, 2015.
10. **Jeffryes, C. (speaker)**. “Bioprocess engineering for the production of nanomaterials and high value biochemicals from microalgae.” *Invited speaker, South Dakota School of Mines Invited Research Seminar Series*. Rapid City, South Dakota, March 20, 2015.
9. Grama, B.S., Chader, S., Khelifi, D., Agathos, S., **Jeffryes, C. (speaker)**. “Physiological response and photosynthetic modelling of a *Dactylococcus* microalga during mixotrophic cultivation on glycerol.” *4th International Conference on Algal Biomass, Biofuels & Bioproducts*. Santa Fe, New Mexico, USA. June 15-18, 2014.

8. **Jeffryes, C. (invited speaker)**, Rorrer, G.L., Li, J., Agathos, S.N. “Development and Application of Photosynthetic Biorefineries”. *SIENR2012 International Seminar on New and Renewable Energies*. Ghardaïa, Algeria, October 14-18, 2012.
7. **Jeffryes, C. (speaker)**, Agathos, S.N. “Novel Photobioreactor-Based Approaches for Improved Productivities of Algal Cell Cultures – The Role of Materials Science in Photobioreactor Design”. *2010 European Biodiesel Board Aquafuels Symposium*. Brussels, Belgium, October 21-22, 2010.
6. **Jeffryes, C. (speaker)**. “Biological Insertion of Germanium and Titanium Oxides” *Invited speaker, Invited Seminar Series, Unité Chimie des Nanomatériaux (Department of Nanomaterial Chemistry)*, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium, June 11, 2010.
5. **Jeffryes, C. (speaker)**, Li, Haiyan, Gutu, T., Jiao, J., Chang, C.-h., Jones, M.E., Rorrer, G.L. “Biological Fabrication of Nanostructured TiO₂ Thin Films for Solar Cell Applications.” *2008 Micro Nano Breakthrough Conference*. Vancouver, WA, September 8-10, 2008.
4. **Jeffryes, C. (speaker)**, Gutu, T., Jiao, J., Chang, C.-h., Rorrer, G.L. “Two-Stage Bioreactor Culture of the Pennate Diatom *Pinnularia* sp. for the Fabrication of a TiO₂- Based Solar Cell.” *2008 Meeting of the Northwest Algal Symposium*, Charleston, OR, April 5, 2008.
3. **Jeffryes, C. (speaker)**, Rorrer, G.L., Jones, M.E. “Fabrication of a Biologically Inspired Dye Sensitized Solar Cell Utilizing the Marine Diatom *Pinnularia* sp.” *Invited speaker, Solid State Physics Seminar Series*, Dept. of Physics, Oregon State University, Corvallis, OR, Jan 16 2008.
2. **Jeffryes, C. (speaker)**, Rorrer, G.L. Chang, C.-H., Jiao, J., Gutu, T. “Diatom Cell Culture for the Self-Assembly of Silicon-Titanium Oxides Ordered at the Submicron and Nanoscales.” *Fall 2007 National Meeting of the American Institute of Chemical Engineers (AIChE)*, Salt lake City, UT, Nov 7, 2007.
1. **Jeffryes, C. (speaker)**, Rorrer, G.L., Chang, C.-H., Gutu, T., Jiao, J. “Two-Stage Diatom Cell Culture for the Supramolecular Assembly of Silicon-Germanium Oxides Ordered at the Submicron and Nanoscales.” *Fall 2006 National Meeting of the American Institute of Chemical Engineers (AIChE)*, San Francisco, CA, Nov 15, 2006.

Conference proceedings

5. **Jeffryes, C.**, Agathos, S.N. “Algae as a Frontier in bioprocessing: Technical & Economic Challenges.” *2009 Symposium for Algae: The Energy Supplier of the Future*. Center for Research & Technology Hellas, Thessaloniki, Greece, October 19, 2009.
4. Rorrer, G.L., **Jeffryes, C.**, Chang, C.-H., Lee, D.-H., Gutu, T., Jiao, J., Solanki, R. “Biological Fabrication of Nanostructured Silicon-Germanium Photonic Crystals Possessing Unique Photoluminescent and Electroluminescent Properties.” In: *Nanoengineering: Fabrication, Properties, Optics, and Devices IV*, E.A. Dobiz, L.A. Eldada (Eds.) *Proceedings of SPIE 6645*, 66450A1-66450A10 (2007).
3. Gutu, T., Lee, D.-H. **Jeffryes, C.**, Rorrer, G.L., Chang, C.-H., Jiao, J. “Electron Microscopy Study of Zinc Silicate Coated Diatom Frustules.” *Proceedings of Microscopy and Microanalysis 2006*, Vol. 12, Supplement 2, 730-731 (2006).
2. Gutu, T., Jiao, J., **Jeffryes, C.**, Qin, T., Chang, C.-H., Rorrer, G.L. “Biosynthesis and Electron Microscopy Characterization of Diatom Nanocomposites.” *Materials Research Society (MRS) Symposium Proceedings*, 901E, 0901-Ra05-14-Rb05-14.1-6 (2006).
1. Gutu, T., Dong, L., Jiao, J., Rorrer, G.L., Chang, C.-H., **Jeffryes, C.**, Qin, T. “Characterization of Silicon-Germanium Oxide Nanocomposites Fabricated by the Marine Diatom *Nitzschia frustulum*.” *Microscopy & Microanalysis*, 11(Sup. 2), 1958-1959 (2005)

Conference Poster Presentations (as presenter or corresponding author)

13. Rahman, A., Kumar, S.V., Bafana, A., Dahoumane, S.A., **Jeffryes, C.** “Biosynthetic conversion of Ag^+ to Ag^0 nanoparticles by *Chlamydomonas reinhardtii*: effects of extrapolymeric substance and cell components on synthesis & stability.” 2019 AIChE Annual Meeting, Poster 175av, Orland, FL, USA, Nov 11, 2019.
12. Bafana, A, Kumar, S.V., Pawar, P., Temizel-Sekeryan, S., Haselbach, L., **Jeffryes, C.** “Environmental impact assessment for high conversion synthesis of <10 nm silver nanoparticles using microwave assisted heating by life cycle techniques.” 2018 AIChE Annual Meeting, Poster 548s, Pittsburgh, PA, USA, Oct. 31, 2018.
11. Lin, J., **Jeffryes, C.** “Development of 3D culture systems requiring no extrinsic gas exchange.” 2018 AIChE Annual Meeting, Poster 188dd, Pittsburgh, PA, USA, Oct. 29, 2018.
10. Ooi, Z.W., Bafana, A., Kumar, S., **Jeffryes, C.** “Biosynthesis of colloidal stabilizing agents for nanotechnology” 2018 AIChE Annual Meeting, Poster , Pittsburgh, PA, USA, Oct. 29, 2018.
9. Pawar, P.P., Kumar, S.V., Bafana, A., Rahman, A., Dahoumane, **Jeffryes, C.** “Green synthesis of copper oxide nanoparticles using a simple microwave-assisted method.” 2017 AIChE Annual Meeting, Mineapolis, Oct 30, 2017, Poster 198m.
8. Mai, T.-N., Rahman, A., Lin, J., Kumar, S.V., Dahoumane, **Jeffryes, C.** “Kinetics of silver cation diffusion across an algal cell wall during silver nanoparticle biosynthesis.” 2017 AIChE Annual Meeting, Mineapolis, Oct 30, 2017, Poster 1910.
7. Kumar, S.V., Rahman, A., Rorrer, G., Mai, T.-N., **Jeffryes, C.** “Wastewater treatment using field deployable macroalgal tissue culture.” 2016 AIChE Annual Meeting, San Francisco, Nov 14, 2016, Poster 228an.
6. Rahman, A., Kumar, S.V., Kare, A., Dahoumane, S.A., Mai, T.-N., **Jeffryes, C.** “Production and kinetics of metallic nanoparticles from phototrophic cell culture.” 2016 AIChE Annual Meeting, San Francisco, Nov 14, 2016, Poster 228v.
5. **Jeffryes, C.**, Grama, B.S., Chader, S., Agathos, S.N. “Biotechnology of Phototrophs – From Metabolic Understanding to Scalable and Energy-Efficient Photobioreactors,” 2015 AIChE Annual Meeting. Nov 8-13, 2015, Salt Lake City, Poster 435199, Session 620a.
4. Grama, B.S., Chader, S., Khelifi, D., Agathos, S., **Jeffryes, C.** “Carotenoids production in a *Dactylococcus* microalga from the Algerian Sahara,” presented at the Belgian Society for Microbiology, Nov 26-27, 2013, Brussels, Belgium. Best poster award, 3rd place (of 60 posters).
3. **Jeffryes, C. (presenter)**, Jones, M., Rorrer, G.L. “Biologically Inspired TiO_2 Thin Film on the Marine Diatom *Pinnularia* sp.” 2008 Safer Nano materials and Nano manufacturing Initiative: Greener Nano, Hewlett-Packard, Corvallis, OR. March 10, 2008.
2. **Jeffryes, C. (presenter)**, Gutu, T., Gale, D., Chang, C.-H., Jiao, J., Rorrer, G.L. “Germanium Insertion into the Silica Structure of the Marine Diatom *Pinnularia* sp.” 2007 Meeting of the Northwest Algal Symposium, Friday Harbor, WA, February 23, 2007.
1. **Jeffryes, C.**, Liu, S., Chang, C.-H., Rorrer, G.L. (presenter) “Biosynthesis of Germanium Oxide by Marine Diatoms,” presented at the 225th American Chemical Society National Meeting, New Orleans, LA, 2003.

Invited and Peer-Selected Conference Presentations (as Co-Author)

17. Ammar, R., **Jeffryes, C.**, Bonneville, S., Delmelle, P. “Volcanic ash and powdered glass display a similar capacity to alleviate Fe stress in marine algae *Dunaliella tertiolecta*.” SOLAS Open Science Conference, Kiel, Germany, September 6-9, 2015a. Presentation #30.
16. Ammar, R., **Jeffryes, C.**, Bonneville, S., Delmelle, P. “Fertilization potential of natural and synthetic volcanic ash in marine phytoplankton.” 2015 Goldschmidt Conference, Prague, Czech Republic, August 16-21, 2015. Presentation #2017.

15. Grama, B.S., Chader, S., Khelifi, D., Agathos, S.N., **Jeffryes, C.** “Induction of canthaxanthin production in a *Dactylococcus* microalga isolated from the Algerian Sahara.” *5th International Conference on Algal Biomass, Biofuels & Bioproducts*. San Diego, California, USA. June 7-10, 2015. Presentation #O2.16.
14. Chader, S., Grama, B.S., Kasbadji, N., Saggai, A., **Jeffryes, C.**, Agathos, S.N. “Energy and Environmental Value of Some Microalgae Strains Isolated from the Algerian Sahara.” EMBS 2014 – Euromediterranean Microalgal and Biotechnology Seminar. Almeria, Spain. October 20-24, 2014.
13. Grama, B.S., Chader, S., Khelifi, D., **Jeffryes, C.**, Agathos, S. “Canthaxanthin Production in a *Dactylococcus* microalga from the Algerian Sahara.” 2013 AIChE Annual Meeting, San Francisco, California, USA, Nov 3-8, Presentation 401f.
12. Rorrer, G.L. (speaker), Rosenburger, J., **Jeffryes, C.** “Two-Stage Photobioreactor Cultivation for Enhancing Lipid Production from Diatom Cells by Controlled Silicon Limitation”. 2012 Algal Biomass Summit. Denver, Colorado, USA, Sept 23-27, 2012.
11. Li, J. (speaker), Stamato, M., **Jeffryes, C.**, DeMarche, P., Nair, R., Bouhaja, E., Junghanns, C., Agathos, S. “Design, characterization and cultivation of microalgae in an airlift flat panel photobioreactor. 8th Asia-Pacific Conference on Algal Biotechnology. Adelaide, Australia, July 10, 2012.
10. **Jeffryes, C.**, Gutu, T., Li, H., Jiao, J., Rorrer, G.L. (speaker). “Peptide-Mediated Deposition of Nanostructured TiO₂ into the Periodic Structure of Diatom Biosilica and its Integration into the Fabrication of a Dye-Sensitized Solar Cell Device.” 2009 Spring Meeting of the Materials Research Society (MRS), Paper MM2.5, Symposium MM: Synthesis of Bio-inspired Hierarchical Soft and Hybrid Materials, San Francisco, CA, April 14, 2009.
9. Rorrer, G.L. (speaker), **Jeffryes, C.**, Gutu, T., Jiao, J. “Peptide-Mediated Deposition of Nanostructured TiO₂ into the Periodic Structure of Diatom Biosilica for Solar Cell Applications.” Fall 2008 National Meeting of the American Institute of Chemical Engineers (AIChE), Paper #122c, Session on Templated Assembly of Inorganic Nanomaterials, Philadelphia, PA, Nov. 17, 2008.
8. Rorrer, G.L. (speaker), **Jeffryes, C.**, Chang, C.-H., Lee, D.-H., Gutu, T., Jiao, J., Solanki, R. “Biological Fabrication of Nanostructured Silicon-Germanium Photonic Crystals Possessing Unique Photoluminescent and Electroluminescent Properties.” SPIE Optics + Photonics 2007, Conference 6645, Nanoengineering: Fabrication, Properties, Optics, and Devices IV, Paper 6645-09, Session 2, Nano-Biotechnology, San Diego, CA, Aug. 28, 2007.
7. Rorrer, G.L. (speaker), **Jeffryes, C.**, Chang, C.-H., Qin, T., Gutu, T., Jiao, J., Solanki, R. “Biological Fabrication of Nanostructured Silicon-Germanium Materials Possessing Unique Photoluminescent and Electroluminescent Properties.” 234th National Meeting of the American Chemical Society (ACS), BIOT Division, Paper #54, Session on Emerging Technologies in Nanobiotechnology, Boston, MA, Aug. 19, 2007.
6. Rorrer, G.L. (speaker), **Jeffryes, C.**, Qin, T., Gutu, T., Jiao, J., Solanki, R., Chang, C.-H. “Cell Culture Process for the Supramolecular Assembly of Nanostructured Silicon-Germanium Oxide Semiconductor Materials.” NanoBio 2007, Second International Congress of Nanobiotechnology & Nanomedicine, San Francisco, CA, June 19th, 2007.
5. Rorrer, G.L. (speaker), Chang, C.-H., **Jeffryes, C.**, Qin, T., Jiao, J., Gutu, T. “Biological Fabrication of Metal Oxide Nanostructures Possessing Novel Optoelectronic Properties.” Session (638) Supramolecular Assembly of Inorganic Materials I, 2006 AIChE Annual Meeting, San Francisco, CA, Nov 17, 2006.
4. Rorrer, G.L., **Jeffryes, C.**, Qin, T., Gutu, T., Jiao, J., Chang, C.-H. “Two-Stage Diatom Cell Culture for the Fabrication of Optoelectronic Materials Ordered at the Submicron and Nanoscale.” Society of Biological Engineering (SBE) Second International Conference on Bioengineering and Nanotechnology, Session on Supramolecular and Self-Assembly, Santa Barbara, CA, Sept. 5, 2006.

Curriculum Vitae for Clayton S. Jeffryes

3. Lee, D.-H., **Jeffryes, C.**, Qin, T., Rorrer, G.L., Chang, C.-H. Fabrication of Luminescent Materials using Biogenic Nanostructured Oxides from Marine Diatoms, T4.9, Symposium T: Nanomanufacturing, Materials Research Society 2006 Spring Meeting, San Francisco CA, April 19, 2006.
2. Rorrer, G.L. (keynote speaker), Chang, C.-H., **Jeffryes, C.**, Liu, S.-H., Qin, T., and Jiao, J. “Whole-cell Biosynthesis of Nanostructured Semiconductor Materials by Marine Diatoms.” 7th International Marine Biotechnology Conference (IMBC 2005), Session on Biomineralization, St. Johns, NL, Canada, June 10, 2005.
1. Rorrer, G.L., Chang, C.-H., **Jeffryes, C.**, Liu, S.-H., Qin, T., Jiao, J. “Cellular Biosynthesis of Nanostructured Semiconductor Materials.” 229th National Meeting of the American Chemical Society (ACS), Division of Industrial & Engineering Chemistry (I&EC), Session on Nanotechnology and the Environment, San Diego CA., March 17, 2005.

Patents and Inventions

1. Rorrer, G.L., Chang, C.-H., **Jeffryes, C.**, Qin, T., Lee, D.-h., Gale, D. “Method for making metal oxides.” Pub. No.: US 2007/0128707 A1.

Outreach and Service to Traditionally Underrepresented Groups

4. Mentor, McNair Scholars Program. Mentee: Cleveland Elijah Keal (2019)
3. Collaboration with the Center for the Development of Renewable Energy (Algiers and Ghardaia, Algeria) to host scientists coming from less-developed nations who wish to study biotechnology and engineering. www.cder.dz. Director: Samira Chader.
2. DaVinci Days, Discover OSU! Engineering Pavilion, Nanobiotechnology, Corvallis OR, July 15-16, 2006; July 21-22, 2007; July 19-20, 2008.
1. Mentor, Oregon Academy of Science and Engineering (ASE), summers 2004, 2005, 2006, 2008. Mentored summer science projects for high school students from underrepresented groups.

Awards

6. Lamar University Merit Award (Highest Award for Assistant Professors), 2019.
5. Anita Riddle Faculty Teaching Fellowship, Lamar University, 2018 – 2021.
4. *Outstanding Graduate Research Assistant Award*, College of Engineering, Oregon State University, 2009.
3. Runner-up, best paper, 2008 Meeting of the Northwest Algal Symposium, Charleston, OR, April 5, 2008.
2. Runner-up, best poster, 2007 Meeting of the Northwest Algal Symposium, Friday Harbor, WA, February 23, 2007.
1. 2002 Outstanding Undergraduate Award, Department of BioEngineering, Oregon State University.

External Peer Review and Professional Service

Session Chair at International Conferences

4. AIChE Annual Meeting, Systems and Quantitative Biology: Modeling Biological Processes, Session 612, Nov 13, 2019
3. AIChE Annual Meeting, Advances in Bioprocess Design for Cell Culture and Bioproduct Production, Session 498, Nov 13, 2019
2. AIChE Annual Meeting, Design for a Circular Economy, Session 325, Nov 12, 2019

Curriculum Vitae for Clayton S. Jeffryes

1. AIChE Annual Meeting, Green Chemistry and Engineering, Session 211, Nov 11, 2019

Manuscript reviews for: Nature Scientific Reports, Energy and Environmental Science, New Journal of Chemistry, Journal of Materials Chemistry, Algal Research, Biomass and Bioenergy, RCS Advances, Journal of Applied Phycology, Biomaterials, Current Opinion in Biotechnology; Journal of Advanced Research, Fuel

NSF Panel Review: Winter 2016, Winter 2017, Winter 2020 (scheduled)

University committees: Institutional Research Board (IRB) (2017 –); Chemical Engineering ABET Committee Chair (2017 –); Chemical Engineering SACS Undergraduate Committee Chair (2017 –); Lamar University Underclassmen Retention Committee (2018 –); Center for Midstream Management and Science (2019 –); Artificial Intelligence Certificate Program Committee (2019 –); Faculty search committee for Lamar University Dept. of Biology (spring 2016)

Faculty adviser: Chi Omega Epsilon (Chemical Engineering Honor Society, 2016 –), Lamar University Cardinal Wrestling Club (2017 – 2019), Lamar University Mixed Martial Arts Club (2019 –)

News Media

1. Science News Daily: Ancient Diatoms Lead to New Technology for Solar Energy.
<http://www.sciencedaily.com/releases/2009/04/090408145556.htm>. Features Jeffryes et al., 2008, *ACS Nano*, 2008; 2(10):2103.

Courses and Seminars

5. ABET Workshop, “Fundamentals of Program Assessment,” ABET Headquarters, Baltimore, MD, June 14, 2019.
4. Seminar, “Writing/Designing Winning NSF Proposals,” Houston Marriott Medical Center, Houston, TX, Jan 28, 2019.
3. Seminar, “Writing/Designing Winning NSF Proposals,” Houston Marriott Medical Center, Houston, TX, Jan 25, 2016.
2. NSF Grants Conference, Nov 2-3, 2015 (webcast).
1. SMART faculty enhancement program, Lamar University, 2015 – 2016.
Updated Nov 30, 2019