

Curriculum vitae

NGUYEN BINH, PH.D.

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PROFESSIONAL INTERESTS

- **Water chemistry:** investigating effects of pH to functional groups, mass transfer of CO₂ and the alkalinity, and contaminant fate and transport
- **Environmental microbiology:** employing microorganisms to clean up pollutants or produce valued products from wastes or solar energy
- **Automation and environmental sensing:** taking advantages of open hardware and wireless communication to control environmental condition such as pH, temperature, turbidity and collecting such data for outdoor applications
- **Developing people and teamwork:** Coaching team members to collaborate in shared tasks, improving communication, problem solving and team commitment

RESEARCH AND WORKING EXPERIENCE

06/2017 – Present: Freelancer

- Simulated the microalgae growth and the productivity by Python script. The program used Excel-like files as the inputs and for the output and the optional generating graph
- Deployed Linux computer to collect environmental data such as temperature directly or via an Arduino board
- Built from the scratch the LED lighting using a motion sensor either attached to the light or communicated wirelessly such as via MQTT protocol
- Built weather station, stored data in SQL database and displayed the data on the web
- Related codes hosted in <https://github.com/binh-bk>

10/2016-05/2017

Executive Trainee, Esquel Garment Vietnam-Hoa Binh Co., Ltd. Hoa Binh, VN

- Led production maintenance team for daily operations including 40 workers, 12 staffs
- Developed a macro-enabled Excel file to check machine availability based on the production loading
- Coached direct reports on communication, problem solving and decision making

9/2015-9/2016

Postdoctoral Research Associate, Biodesign Swette Center for Environmental Biotechnology (BSCEB), Arizona State University Phoenix, AZ, US

- Improved carbon dioxide sequestration by microalgae by conditioning alkalinity growth environment, stable pH and delivering CO₂ through hollow-fiber membrane
- Developed a turbidostat system to automatically measured and controlled microalgae biomass
- Coordinated research activity and laboratory management of ~7-member team

2010-2015

Graduate Research Associate, BSCEB Phoenix, AZ, US

- Delivered milestones in U.S. Department of Energy (DoE) grant: "Managing the Microbial Ecology of a Cyanobacteria-Based Photosynthetic Factory Direct!" 2012-2014
- Designed, optimized and operated small photobioreactors with pH-Stat function to study carbon, electron partitioning under different light intensity by microalgae
- Mentored 2 undergrads, 2 visiting scholars and various laboratory tours

2009-2010

Project developer, Camco South East Asia Ltd, Hanoi Office, Vietnam

- Collected input and prepared documents of Clean Development Mechanism (carbon mitigation credit) projects in wastewater and hydropower utilizing spreadsheet
- Prepared 2 reports on hydropower, 3 reports on wastewater projects for senior executives

2007-2009:

Project Developer/Manager, Vietnam Energy and Environment JSC. Hanoi, Vietnam

- Managed multiple stages of CDM projects from study feasibility, select methodology, collect documents, due diligence, and validation
- Advanced 3 projects to the validation stage (with DNV, TUV-NORD); 2 projects contracted with clients; 8 projects in process

EDUCATION

Ph.D., 2015, Arizona State University (ASU) Phoenix, AZ, US

- Major: Civil, Environmental Engineering and Sustainable Engineering
- *Dissertation title:* "Photoautotrophic Production of Biomass, Laurate, and Soluble Organics by *Synechocystis* sp. PCC 6803"
- Committee members: (Drs.) Bruce E. Rittmann (Chair); Rosa Krajmalnik-Brown, Paul Westerhoff

M.S., 2012, Arizona State University Phoenix, AZ, US

B.S., 2007 Hanoi University of Science and Technology Hanoi, Viet Nam

JOURNAL PUBLICATIONS

1. **Nguyen, B. T.,** & Rittmann, B. E. (2018). Low-cost optical sensor to automatically monitor and control biomass concentration in microalgal cultivation. *Algal Research*, 32, 101-106.
2. Zhou, Y., **Nguyen, B. T.,** Zhou, C., Straka, L., Lai, Y. S., Xia, S., & Rittmann, B. E. (2017). The distribution of phosphorus and its transformations during batch growth of *Synechocystis*. *Water research*, 122, 355-362.

3. Zhou, Y., **Nguyen, B. T.**, Lai, Y. S., Zhou, C., Xia, S., & Rittmann, B. E. (2016). Using flow cytometry to evaluate thermal extraction of EPS from *Synechocystis* sp. PCC 6803. *Algal Research*, 20, 276-281.
4. Zhou, Y., Xia, S., Zhang, J., **Nguyen, B. T.**, & Zhang, Z. (2017). Insight into the influences of pH value on Pb (II) removal by the biopolymer extracted from activated sludge. *Chemical Engineering Journal*, 308, 1098-1104.
5. **Nguyen, B. T.**, & Rittmann, B. E. (2016). Effects of inorganic carbon and pH on growth kinetics of *Synechocystis* sp. PCC 6803. *Algal Research* 19, 363-369.
6. **Nguyen, B. T.**, & Rittmann, B. E. (2016). Electron partitioning in soluble organic products by wild-type and modified *Synechocystis* sp. PCC 6803. *Biomass and Bioenergy*, 90, 237-242.
7. **Nguyen, B. T.**, & Rittmann, B. E. (2015). Predicting dissolved inorganic carbon in photoautotrophic microalgae culture via the nitrogen source. *Environmental science & technology*, 49(16), 9826-9831.

PRESENTATIONS

1. **Nguyen, B. T.**, & Rittmann, B. E. Managing alkalinity, pH, and inorganic carbon to support high-rate microalgae cultivation. 2016 IWA Leading Edge Conference on Water and Wastewater Technologies, Spain. (poster)
2. **Nguyen, B. T.**, & Rittmann, B. E. Improving photoautotrophic growth by maintaining a fixed growth pH and a sufficient inorganic carbon, Pacifichem 2015, Hawaii, U.S. (poster)
3. **Nguyen, B. T.**, & Rittmann, B. E. Using a pH-stat to understand how the N source affects the concentration of inorganic carbon in microalgae culture publication description ACS 249th National Meeting and Exposition (oral presentation)

HONORS AND AWARDS

1. Certificate of Merit (2015): Division of Environmental Chemistry- American Chemical Society for the quality and relevance to advancement of environmental process
2. Service Award (2014) by Vietnam Education Foundation Fellows Association (VEFFA)
3. Certificate of Appreciation (2012, 2013) in recognition of valuation contributions to the Vietnam Education Foundation annual conferences
4. Vietnam Education Foundation fellowship (2010-2012)

OTHER SERVICES

- Director of Executive team of VEF Fellows and Scholars Association (2013-2014)
- Core team member (2013-2016), editor of Vietnam Journal of Science
- Reviewer for Environmental Science and Technology and Algal Research Journals