

Wasut Pornpatcharapong

International College of Digital Innovation, Chiang Mai University

Email: wasut.p@cmu.ac.th / wasut.p@icdi.cmu.ac.th

LinkedIn / ResearchGate / Google Scholar: Wasut Pornpatcharapong

Instagram: @ajwasut.icdi.cmu

YouTube: @EntropicChemistry / @the-ascent-series-with-wasut



Computational scientist with a foundation in theoretical chemistry, developing methods and systems across AI, thermodynamics, complex systems, carbon accounting and sustainability, digital innovation, and human-AI interaction.

RESEARCH INTERESTS

Computational Science · Theoretical Chemistry · Scientific ML · AI for Physical Systems · Thermodynamics · Statistical Mechanics · Free-Energy Landscapes · Surrogate Modeling · Complex Systems · Stochastic Processes · Human-AI Interaction · Carbon Analytics · Sustainability · Digital Innovation

EDUCATION

Ph.D. in Chemistry (Computational & Theoretical Chemistry) | 2018

University of California, San Diego, La Jolla, CA, USA

Advisor: Prof. John H. Weare

- **Focus:** Machine learning in molecular modeling, Markov processes, Gaussian Process Regression
- **Doctoral Dissertation:** *Understanding chemical reactions through the theoretical lenses: Markov State Model and Gaussian Process Regression for an identification of reaction coordinates and computation of multidimensional free energy surface*
(**Key themes:** stochastic modeling, GPR, machine learning, algorithmic simulations)

B.A. in Chemistry | 2010

Northwestern University, Evanston, IL, USA

Advisor: Prof. George C. Schatz

- **Departmental Honor**, Department of Chemistry, Weinberg School of Arts and Sciences
- Supplemental coursework in quantum chemistry and basic engineering courses, especially the iconic **"Engineering Design and Communication" (EDC) course** where students form small groups and design engineering solutions for clients.

CONFERENCES & SYMPOSIUMS

- **29th International Computer Science and Engineering Conference (ICSEC) 2025, Chiang Mai, Thailand** (November 2 - 5, 2025)
- **2026 Computational Chemistry Gordon Research Conference: Molecular Discovery and Simulation in the AI Era, Castelldefels, Barcelona, Spain** (July 19 - 24, 2026)

PUBLICATIONS

- W. Pornpatcharapong, "Neural Network Surrogates for Free Energy Computation of Complex Chemical Systems," *2025 International Computer Science and Engineering Conference (ICSEC)*, Chiang Mai, Thailand, pp. 135-140, doi: 10.1109/ICSEC67360.2025.11298121.
- W. Pornpatcharapong, "A Markov state model study of the water exchange reaction around Mg²⁺ ion in an aqueous environment," *Chiang Mai Journal of Science*, vol. 52, no. 4, p. e2025040, 2025, doi: 10.12982/CMJS.2025.040.
- W. Pornpatcharapong, "Gaussian Process Regression for Mapping Free Energy Landscape of Mg²⁺-Cl⁻ Ion Pairing in Aqueous Solution: Molecular Insights and Computational Efficiency," *Molecules*, vol. 30, p. 2595, 2025, doi: 10.3390/molecules30122595. (**Scopus / SJR Q1, IF 4.6 / CiteScore 8.2**)

PROFESSIONAL EXPERIENCE

Chiang Mai University, Chiang Mai, Thailand | 2025 - Present

Faculty Member, School of Digital Innovation, International College of Digital Innovation (ICDI)

- Founder, Lead Architect, and Coordinator of **ICDI Ascent**, the innovative summer internship program of ICDI. **(Nov 2025 - Present)**
- Committee Member on ICDI's Undergraduate Curriculum Promotion **(Nov 2025 - Present)**
- Working Member on ICDI - School of Information Science, University of Electrical Science and Technology China (UESTC) Double Degree Program Partnership **(2025 - Present)**
- MC for External-facing Events, such as New Freshmen Orientation, Double Degree Programs etc. **(2025 - Present)**
- Committee Member on ICDI's Undergraduate Curriculum **(B.Sc. in Digital Innovation (International Program)) (Dec 2025 - Present)**
- Responsible Faculty Member on ICDI's Undergraduate Curriculum **(B.Sc. in Digital Innovation (International Program)) (Mar 2026 - Present)**
- Curriculum Reforming Committee on ICDI's Master's Curriculum **(M.Sc. in Digital Innovation, Financial Technology and Emerging Technologies) (April 2026 - Present) (Appointment Pending)**
- Working Member on ICDI's Carbon Neutrality Initiatives **(Mar 2026 - Present)**
- CMU Internal Curriculum Quality Assurance Assessor **(2026 - Present)**
- Certified Advisor / Verifier / VVB for Carbon Footprint for Organizations (CFO) by Thailand Greenhouse Gas Management Organization (TGO) **(Expected 2026)**

Chiang Mai University, Chiang Mai, Thailand | 2018 - 2025

Faculty Member, Department of Chemistry, Faculty of Science

- Freshman Chemistry Laboratory Coordinator **(2020 - 2024)**
- Departmental Laboratory Safety Committee **(2020 - 2025)**
- Departmental IT Consultant **(2021 - 2025)**
- National Science Day Chemistry Judge Panel for High School Scientific Problem Solving Competition **(2021, 2023)**
- Upper Northern Thailand High School Chemistry Olympiad Committee **(2019 - 2020)**
- Speaker and trainer at educational innovation events (e.g., Mango Canvas, Generative AI Workshops) held by TLIC, Chiang Mai University.

University of California, San Diego, La Jolla, CA, USA | 2010 - 2018

Graduate Teaching and Research Assistant

- Applied stochastic modeling and ML to simulate chemical processes.
- Created Python-based analytics for processing and interpreting high-dimensional data.

AWARDS, COMMITTEES AND SCHOLARSHIPS

- Ministry of Science and Technology Scholarship (Currently under the Ministry of Higher Education, Science, Research and Innovation of Thailand (MHESI)) **(2005)**
- Generative AI Grant for Teaching (2/2025 Semester), Teaching and Learning Innovation Center (TLIC), Chiang Mai University **(2026)**
- Student Activities Grant "Winning the BANI World with Soft Skills," CMU Lifelong Education, Chiang Mai University **(2026)**
- Appointed Internal Quality Assessor for curricula in Chiang Mai University by Education Quality Development unit, Chiang Mai University **(2026)**
- **Chiang Mai University Professional Standard Framework (CMUPSF)**
 - Teaching - **First recognized faculty member in Chiang Mai University** to earn 7 competency badges in teaching at Level 2 - Practitioner
 - **CMU-Appointed evaluator of CMUPSF competency badges in teaching**
 - **A1-2:** Active classroom practitioner **(Level 2 of 4) (2026)**
 - **A2-2:** Asynchronous learning facilitator **(Level 2 of 4) (2026)**
 - **D1-2:** Technology-rich Learning Designer **(Level 2 of 4) (2026)**
 - **D2-2:** Digital Media Creator **(Level 2 of 4) (2026)**
 - **OE1-2:** Learning Outcome Designer **(Level 2 of 4) (2026)**
 - **OE2-2:** Learning Activities & Assessments Designer **(Level 2 of 4) (2026)**
 - **OE3-2:** Continuous Quality Improvement **(Level 2 of 4) (2026)**

TECHNICAL SKILLS

- **Programming:** Python (NumPy, SciPy, Scikit-Learn, Matplotlib, Pandas, Jupyter), C, JavaScript
- **Python-based Open Source Simulation Tools:** PySCF, OpenMM, PyMOL
- **Mathematics & Physics:** Thermodynamics, Statistical Mechanics, Stochastic Processes
- **Creativity Suites:** Adobe (Photoshop, Lightroom, Illustrator, Audition), Final Cut Pro, Logic Pro
- **Languages:** Thai (native), English (fluent), Mandarin & Spanish (conversational), Russian (basic)
- **AI:** Claude (For vibe coding), ChatGPT, Gemini, DeepSeek, QWen, Grok, Manus

TRAINING & CERTIFICATES

- CMU Academy for Future Educators (CAFE), **CMU HR, Chiang Mai University**
- Huawei HCIA-AI Certificate, **Huawei**
- Official CWIE Workshop for Faculty Members, **Ministry of Higher Education, Science, Research and Innovation of Thailand (MHESI) / Payap University**
- KKU - CMU - PSU SROI Practitioner Platform, **Chiang Mai University**
- Generative AI Workshop for Research, **International College of Digital Innovation (ICDI), Chiang Mai University**
- Generative AI Workshop for Curriculum Design, **Chiang Mai University**
- Generative AI Workshop for Research, **Chiang Mai University**
- Generative AI Workshop for Course Materials Design, **Chiang Mai University**
- Workshop on Human Research Ethics, **International College of Digital Innovation (ICDI), Chiang Mai University**
- Skills4Life: Train the Trainers Workshop for Learning Facilitators, **CMU Lifelong Education, Chiang Mai University**
- Future Skills Workshop, **CMU HR, Chiang Mai University**
- Carbon Emissions Auditing for CMU Units, **CMU HR, in collaboration with Energy Research and Development Institute (ERDI), Chiang Mai University**
- Carbon Footprint for Organizations (CFO) Workshop, **Energy Research and Development Institute (ERDI), Chiang Mai University, in collaboration with Thailand Greenhouse Gas Management Organization (TGO)**
- Curriculum Financial Stability: From Theory to Practice, **Office of Educational Quality Development (EQD), Chiang Mai University**
- CFO VVB Workshop, **Thailand Greenhouse Gas Management Organization (TGO), TK Palace and Convention Center Hotel, Bangkok**
- Green Office Workshop, **Faculty of Architecture, Chiang Mai University**
- Curriculum Internal Quality Assurance / Assessor Workshop, **Office of Educational Quality Development (EQD), Chiang Mai University**

COMPANIES / ORGANIZATIONS ADVISED

- Medihealth Solutions Co., Ltd., Chonburi, Thailand (CFO)

CURRICULUM ASSESSMENT

- M.Sc. and Ph.D. of Industrial Chemistry and Chemical Innovation (2026), **Department of Industrial Chemistry, Faculty of Science (CMU-QA)**

COURSES TAUGHT

- **CHEM 6AH:** Honors General Chemistry A (Introductory Quantum Chemistry) - **UC San Diego, USA**
- **CHEM 6C:** General Chemistry C - **UC San Diego, USA**
- **CHEM 131:** Chemical Thermodynamics - **UC San Diego, USA**
- **203111:** Chemistry 1 (**International, taught in English**) - **Chiang Mai University, Thailand**
- **203113:** Chemistry 2 (**International, taught in English**) - **Chiang Mai University, Thailand**
- **203115:** Chemistry Laboratory 1 (Course coordinator) - **Chiang Mai University, Thailand**
- **203162:** General Chemistry for Engineering Students - **Chiang Mai University, Thailand**

COURSES TAUGHT (CONTINUED)

- **203167:** General Chemistry Laboratory for Engineering Students (**Both Thai and English**) - Chiang Mai University, Thailand
- **203226:** Physical Chemistry for Non-Chemistry Students (**Both Thai and English**) - Chiang Mai University, Thailand
- **203255:** Mathematics in Chemistry - Chiang Mai University, Thailand
- **203424:** Advanced Physical Chemistry 2 (Statistical Thermodynamics) - Chiang Mai University, Thailand
- **203458:** Special Topics in Chemistry (Coding in Chemistry), Chiang Mai University, Thailand
- **888212:** Fundamental Digital Tools for Entrepreneurs, Chiang Mai University, Thailand
- **888454:** Startups in Biofuels and Biochemical Technology, Chiang Mai University, Thailand
- **888461:** Startups in Manufacturing, Chiang Mai University, Thailand
- **888462:** Startups in Space Innovation and Orbital Technology (Proposed for 2028 B.S. Curriculum), Chiang Mai University, Thailand
- **888463:** Startups in Carbon Management and Climate Science (Proposed for 2028 B.S. Curriculum), Chiang Mai University, Thailand

PERSONAL VALUES

- Deep appreciation for multicultural environments, nurtured through independent global travel
- Passion for lifelong learning and tackling intellectually demanding problems
- Strong belief in cross-cultural dialogue, open inquiry, and boundary-crossing innovation
- Work - health balance: marathon-fueled cutting edge research: when a healthy body carries a sharp mind
- Scientific independence with multidisciplinary touches - boldly independent in my niche (as proven in my publications), but seek out intellectual challenges from working across domains
- Open to cross-domain collaborations and expertise sharing while fostering tighter intra-domain disciplines and promoting collaborations with advanced ML-for-chemistry groups through building up from my recently accepted Q1 work.