

# Ngoc Ballard

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## SUMMARY

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Dedicated computational chemist with over five years in catalysis research, specializing in electrocatalysis and heterogeneous systems. Demonstrated expertise includes developing multiscale modeling techniques, conducting spectroscopy simulations, and implementing machine learning methods for catalyst design. Proven collaborator, successfully mentoring junior researchers while contributing to grant proposals that secure funding. Excited to bridge experimental insights with computational advancements to further innovative research.

## EXPERIENCE

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### Postdoctoral Researcher

June 2022 - Present

University Research Lab

Chicago, IL

Overseeing computational projects focused on electrocatalysis, enhancing understanding through advanced modeling strategies.

- Led studies in catalytic process optimization, influencing energy sustainability efforts.
- Developed algorithms for multiscale modeling, improving investigations into electrocatalytic mechanisms.
- Conducted high-level spectroscopy simulations using XANES and EXAFS, supporting collaborative experiments.
- Integrated computational findings with lab work, promoting interdisciplinary collaboration.
- Mentored students in data acquisition and analysis techniques, enriching educational experiences.
- Secured multiple grants through effective proposal writing, advancing key research initiatives.

### Research Scientist

August 2018 - May 2022

Innovative Science Institute

Chicago, IL

Drove impactful research within heterogeneous catalysis realms, showcasing achievements through AI integrations.

- Explored microkinetic modeling approaches, establishing a foundational impact on reactor design protocols.
- Implemented Python-driven machine learning methodologies improving predictive analyses for catalysts.
- Published comprehensive research in top-tier journals, articulating complex scientific principles effectively.
- Played a pivotal role in securing national funding by deftly participating in detailed proposal development.
- Collaborated closely with experimental teams to refine strategy based on computational results.
- Streamlined research workflows, automating repetitive tasks through tailored model developments.

## LEADERSHIP & AWARDS

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- Best Paper Award, International Conference on Catalysis, 2023
- Dean's List, University of Illinois, 2019

## EDUCATION

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### Ph.D. in Chemical Engineering

2021

University of Illinois GPA: 3.8

Champaign, IL

**Coursework:** Thermodynamics, Reaction Engineering, Computational Chemistry, Advanced Spectroscopy

## CERTIFICATIONS

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- Certified Python Programmer 📅 2023
- Machine Learning for Scientists 📅 2025

## TECHNICAL SKILLS

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- **Modeling Software:** COMSOL, MATLAB, ANSYS
- **Programming Languages:** Python, R, C++
- **Simulation Tools:** Gaussian, VASP, Quantum Espresso
- **Spectroscopy Techniques:** XANES, EXAFS, Mössbauer
- **Machine Learning Frameworks:** TensorFlow, PyTorch, scikit-learn
- **Statistical Analysis:** R, SPSS, MATLAB
- **Optimization Algorithms:** Genetic Algorithms, Particle Swarm, Simulated Annealing
- **Project Management Tools:** Trello, Asana, JIRA
- **Version Control Systems:** Git, SVN, Mercurial
- **Visualization Software:** Matplotlib, Seaborn, Tableau

## SKILLS

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- Multiscale modeling
- Spectroscopy simulations
- Machine learning
- Python programming
- Catalyst design
- Proposal writing
- Data analysis
- Scientific publishing
- Mentoring
- Collaboration
- Chemistry fundamentals
- Computational methodologies
- Interdisciplinary teamwork
- Funding applications
- Experimental validation

## PROFESSIONAL AFFILIATIONS

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- President, Graduate Chemistry Society, University of Illinois, 2020-2021
- Volunteer Mentor, STEM Outreach Program, 2019-2021

## LANGUAGES

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- English (Native)
- Vietnamese (Proficient)

## ADDITIONAL INFORMATION

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**Work Status** : Authorized to work in United States. No sponsorship required.

## REFERENCES

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AVAILABLE ON REQUEST