


DR. RAYMOND CHRISTOPHER AMADOR

PERSONAL DATA	Steinstrasse 35 8003 Zürich, Switzerland  ramador09	 +41 79 812 8268  ray@ramador.me  ramador09	Nationality United States Gender Male  Google Scholar
LANGUAGES	English (native), German (spoken and written fluency), Spanish (B1), Italian (A2)		
EDUCATION	DOCTOR OF SCIENCES: ETH Zurich, Zurich, Switzerland 3/2021 – 5/2025 ▷ Dissertation: <i>Enhanced sampling of chiral reactions on chiral surfaces</i> ▷ Laboratory: nanotech@surfaces, Empa, Dübendorf, Switzerland ▷ Supervision: Prof. Dr. Daniele Passerone, Prof. Dr. Mathieu Luisier		
	MASTER OF SCIENCE: Humboldt-Universität zu Berlin, Berlin, Germany 3/2017 – 11/2020 ▷ Master's thesis: <i>The electronic structure and optical properties of Na₂KSb and NaK₂Sb for photocathode applications: an ab initio study</i> ▷ Supervision: Prof. Dr. Caterina Cocchi, Prof. Dr. Thorsten Kamps		
	ERASMUS: Universidad de Salamanca, Salamanca, Spain 8/2015 – 3/2016 ▷ Research paper: <i>Amistad Olvidada: el rol de España en la Revolución Estadounidense</i> (engl.: the Roll of Spain in the US War of Independence)		
	BACHELOR OF SCIENCE: University of Miami, Coral Gables, Florida, USA 8/2009 – 5/2013 ▷ Bachelor's thesis: <i>The DXL Sounding Rocket Mission to Study Solar Wind Charge Exchange</i> ▷ Supervision: Prof. Dr. Massimiliano Galeazzi		
ACADEMIC & PROFESSIONAL EXPERIENCE	PhD Researcher 3/2021 – 5/2025 ETH Zurich & Empa , Dübendorf, Switzerland Supervisors: Prof. Dr. Daniele Passerone, Prof. Dr. Mathieu Luisier ▷ Development and application of enhanced sampling techniques (metadynamics) and machine-learned interatomic potentials (using DeePMD and TensorFlow) to study chiral reactions on chiral surfaces, including the design of a custom chiral collective variable investigation of adsorption energetics ▷ Large-scale <i>ab initio</i> and classical molecular dynamics simulations (CP2K, LAMMPS, PLUMED), including trajectory generation, analysis, and validation against experimental observables ▷ Analysis of high-dimensional simulation data to extract reaction mechanisms, free energy surfaces, and structure–property relationships; implementation of automated Python-based workflows for reproducible data processing ▷ Collaboration with experimental groups and contribution to interdisciplinary projects in surface science and catalysis; supervision of Master's students and coordination of research tasks ▷ Conference contributions including DPG Spring Meeting (2023 Regensburg, 2024 Berlin), Surface Science Symposium (2023 Courmayeur), and co-organization of the MARVEL Junior Retreat (2024 St. Moritz) ▷ Skills: density-functional theory (DFT), molecular dynamics (MD), metadynamics, statistical analysis, scientific computing (Python, NumPy, SciPy), high-performance computing (HPC), data analysis pipelines, Git, scientific writing and presentation		
	Visiting Researcher 5/2024 – 10/2024 Instituto Italiano di Tecnologia , Genoa, Italy Supervisors: Dr. Umberto Raucci, Dr. Peilin Kang, Dr. Enrico Trizio ▷ Development of machine-learned interatomic potentials (MLIPs) trained on trajectories from <i>ab initio</i> molecular dynamics to study chemical reactions on catalytic surfaces ▷ Used CP2K and LAMMPS to obtain the trajectories, and DeePMD to generate the MLIPs ▷ Skills: proposal writing (for computational time), Python (and libraries), Bash scripting, make files, GitHub, Git, high-performance computing architecture, GPU acceleration, pesto making		
	Graduate Teaching Assistantship Spring 2021, 2022, 2023 Molecular and Materials Modelling: ETH Zurich, Zurich, Switzerland Level: Master's, PhD ▷ Description: Python- and HPC-based implementation of concepts in the simulation of materials		

- ▷ Content: HPC clusters; GitHub; Lennard-Jones fluids; theory of dispersion and van der Waals interactions; mean-field theories (density-functional theory, Hartree-Fock); molecular orbital theory; molecular dynamics; metadynamics
- ▷ **Responsibilities:** design, implementation, and grading of Jupyter notebook assignments; delivery and explanation of subject matter during lecture; administration of end-of-semester oral examinations
- ▷ Workload: approx. 10-15 additional hours per week during the semester
- ▷ **Skills:** instruction and supervision, didactics, syllabus planning, exam design, Git incorporation, exercise conceptualization

Student Assistant 11/2019 – 12/2020
Helmholtz-Zentrum Berlin, Adlershof, Germany
 Supervisor: Prof. Dr. Thorsten Kamps
 ▷ Investigation of the experimental growth and characterisation of Cs-Na-K-Sb photocathode layers using the in-house growth apparatus

Scientific Assistant 9/2018 – 12/2020
IRIS Adlershof, Institut für Physik, HU-Berlin, Berlin, Germany
 Supervisor: Prof. Dr. Caterina Cocchi
 ▷ Characterisation of the electronic structure and optical properties of Na₂KSb and NaK₂Sb for their use as electron sources in photocathodes for particle accelerators

Laboratory Assistant: X-Ray Physics 9/2017 – 03/2018
Leibniz Institute for Crystal Growth, Adlershof, Germany
 Supervisor: Prof. Dr. Martin Schmidbauer
 ▷ Researching the scattering of incident x-rays at crystal surfaces to study electronic structure

STUDENT 9/2023 – 2/2024
 SUPERVISION Master, ETH Zürich
Master's thesis: *Modeling chiral reactions with ab initio simulations: anticipating future experiments*
 ▷ Currently: PhD Student with Prof. Dr. Mariana Rossi; Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany

9/2024 – 2/2025
Semester project *Active learning a classical potential for a hydrogenation reaction on chiral surfaces*
 ▷ Currently: continuing student at ETH Zürich

MISC. PROF. 3/2018 – 2/2021
 EXPERIENCE Cocktail Bartender
 (SELECTED) **Süß War Gestern**, Berlin – Friedrichshain, Germany

7/2016 – 2/2021
 Barista and Bartender
The Caramina: Persian Kitchen, Berlin – Neukölln, Germany

12/2016 – 8/2019
 Extracurricular Activities Advisor
Humboldt-Institut, Berlin – Mitte

4/2014 – 12/2014
 Teacher of English
University of Cambridge – CELTA, International House, Seville, Spain

REFERENCES
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AFFIRMATION **ZÜRICH. Friday 5th June, 2026**

