Dominikus Brian

Domi is a ResearchPreneur passionate in advancing scientific literacy in agentic AI systems

AI Engineering for Science across digital and physical space. Worked on advanced materials for energy harvesting, theoretical and computational chemistry, quantum dynamics in molecular systems, optogenetics molecules, autonomous laboratory, artificial intelligence, full-stack software development

[Vision]

To be a Gardener of Knowledge

[Mission]

Learn More | Do More | Share More

DreamBrookLabs.com | *dominikusbrian.com*

Research | Experience

Current Research Focus

Research Intent Model : Agentic Intent Discovery and Prediction for Scientific Research Project Page

ARTEMIS : Automated Review and Trustworthy Evaluation for Manuscripts in Science Project Page

Agentic Memory for Continuous, Long-term, and Evolving Scientific Literature Understanding Project Page

Publications

Dominikus Brian, 2024. "Flying Safer Around Miami: Predictive Machine Learning Model for Real-Time Meteorological Aerodrome Report (METAR), under review. 10.55277/ResearchHub.1z7lu2x3.1

Liu, Zengkui, **Dominikus Brian**, and Xiang Sun, 2024. "PyCTRAMER: a python package for charge transfer rate constant of condensed-phase systems from marcus theory to fermi's golden rule", The Journal of Chemical Physics(6), 161. 10.1063/5.0224524

Dominikus Brian and Xiang Sun, 2021. "Charge transfer landscape manifesting structure-rate relationship in the condensed phase via machine learning", The Journal of Physical Chemistry B(125), 48. 10.1021/acs.jpcb.1c08260

Dominikus Brian and Xiang Sun, 2021. "Generalized quantum master equation: a tutorial review and recent advances", Chinese Journal of Chemical Physics(5), 34:497-524. 10.1063/1674-0068/cjcp2109157

Dominikus Brian and Morteza Eslamian, 2020. "Design and development of a coating device: multiple-droplet drop-casting (MDDC-Alpha)",(3), 91. 10.1063/1.5129699

Hu, Zhubin, **Dominikus Brian**, and Xiang Sun, 2021. "Multi-state harmonic models with globally shared bath for nonadiabatic dynamics in the condensed phase",(12), 155. 10.1063/5.0064763

Dominikus Brian and Xiang Sun, 2021. "Linear-response and nonlinear-response formulations of the instantaneous marcus theory for nonequilibrium photoinduced charge transfer", J. Chem. Theory Comput.(4), 17:2065-2079. 10.1021/acs.jctc.0c01250

Dominikus Brian, Zengkui Liu, Barry D. Dunietz, Eitan Geva, and Xiang Sun, 2021. "Three-state harmonic models for photoinduced charge transfer",(17), 154. 10.1063/5.0050289

Dominikus Brian and Morteza Eslamian, 2019. "Analysis of impact dynamics and deposition of single and multiple pedot:pss solution droplets", Exp Fluids(9), 60. 10.1007/s00348-019-2784-4

Dominikus Brian, Mohammad-Reza Ahmadian-Yazdi, Claire M. Bolding, and Morteza Eslamian, 2019. "Impact dynamics and deposition of perovskite droplets on pedot:pss and tio2 coated glass substrates", Experimental Thermal and Fluid Science, 105:181-190. 10.1016/j.expthermflusci.2019.03.021

Gholampour, Nadia, **Dominikus Brian**, and Morteza Eslamian, 2018. "Tailoring characteristics of pedot:pss coated on glass and plastics by ultrasonic substrate vibration post treatment", Coatings(10), 8:337. 10.3390/coatings8100337

LAST UPDATED = September 2023
See https://dominikusbrian.com for more

Vision: To be a Gardener of Knowledge. **Mission:** Learn more, Do more, Share more. **Personality:** ENFJ-A (16personalities.com).**Top 5 Core character traits:** Coach, Deliverer, Believer, Philomath, Catalyst. (high5test.com) **Language:** English, Chinese, Bahasa Indonesia. Cantonese (learning), German (learning)**Talent Status:** Shanghai City Type A Foreign Talent.

Education

09/2020 - 01/2023

New York University (NYU)

Chemistry, Theory & Computation (Ph.D Candidate → M.Sc.)

Dissertation topic: Charge Transfer Landscape in the Condensed Phase: Simulation and Modelling of Photoinduced Charge Transfer of Organic Photovoltaics Molecule

09/2017 - 03/2020

University of Michigan - Shanghai Jiao Tong University Joint Institute

Power Engineering and Engineering Thermophysics (M.Sc.)

Master's thesis: Droplet Impact, Spreading, and Wetting of Perovskite and PEDOT: PSS Solutions.

09/2013 - 07/2017

Shandong University of Science and Technology

Chemical Engineering and Technology (B.Sc.)

Bachelor's thesis: Investigation of Self-Cooling Thermoelectric Device for Waste Heat Energy Harvesting.

Biography

Dominikus Brian (钟鸿盛) is a researcher, analyst, and engineer passionate in global energy transition and sustainable development. Domi's current main scientific and market research expertise are on future energy system, AI for Science, and organic semiconductors. Domi is an industrious well-rounded researcher trained in both theoretical, computational, and experimental science and engineering covering the field of energy, power, nanotechnology, advanced materials, AI, and machine learning. Domi is an avid reader and gardener living in Shanghai, China.

Work & Leadership Experience

LONGi Solar, Central R&D Institute — **03/2023 - Present**

Senior Staff Engineer, Research of Innovation Strategy

In my role as an engineer for research and innovation strategy, I contemplate, survey, and assess various technological roadmap for the future of energy and photovoltaics (PV) material. In particular, I specialized in understanding and developing photovoltaics materials and emerging devices for future energy market. Main research topics are: Integrated PV Thermal System(PVT), Vehicle Integrated Pv(VIPV), Vehicle-to-grid(V2G), Edge Energy system, Smart PV, AI for science : Large-Language Model based scientific literature review and data sourcing, Digitalization and AI-integration into new material research through algorithm and data architecture.

New York University Shanghai. — **08/2022 - 01/2023**

Member of the Interdisciplinary Colloquium Organizing Committee

The interdisciplinary colloquium (IDC) organizing committee was established to facilitate interdisciplinary interactions among the STEM faculties, postdocs and PhD students, aiming to bring together people with different backgrounds, and brainstorm new research projects. The program developed by the IDC focus on promoting discussion around the future of interdisciplinary research at NYU Shanghai. I am contributing to the committee in my role as a PhD student leadership representative.

Dept. of Chemistry New York University | Division of Arts and Science NYU Shanghai | NYU-ECNU Center for Computational Chemistry — **09/2020 - 01/2023**

Graduate Research Fellow

Develop computational model and calculation protocol for investigating the conformation and chemical space of organic photovoltaics molecule. Worked with the theoretical background framework for charge transfer and quantum dynamics in condensed phase molecular systems. Perfomed and develop in-house code, software, and interface for big data analysis, machine learning, and scientific computation. Mastered the basics operation and management of supercomputer platform.

Coal, Metals, and Mineral Trade Broker Intern — **09/2021 - 12/2022**

ZHF Trade

Work on prospecting, inspection, and dealing of information and lead for coal, metals, and minerals supply from Indonesia. Perform due-diligence on company financial and the coal quality based on certification and analysis proof. Go through and negotatiate terms and condition with supplier (Indonesian Miners and Shippers) and end customers (Chinese traders and power plants).

Skills

Computational

C++ ▪ Python ▪ Unix/Linux ▪ HPC ▪ Machine Learning ▪ Git ▪ Jupyter Notebook & Lab ▪ Julia ▪ Machine Learning (scikit-learn, PyTorch, TensorFlow) ▪ Big Data ▪ VMD ▪ AutoCAD ▪ COMSOL ▪ Adobe (Illustrator & Photoshop) ▪ Maya ▪ SOLIDWORKS ▪ ImageJ ▪ FIJI ▪ Origin ▪ MATLAB ▪ Aspen plus ▪ ANSYS ▪ Quantum Chemisty (Gaussian, QChem, Terachem, Turbomole, Orca).

Experimental

General wet and analytical chemistry ▪ Spray Coating, Spin Coating, and Blade Coating ▪ 3D-printing ▪ Tensiometer ▪ Rheometer ▪ CMOS High-Speed imaging ▪ Surface Profilometry ▪ SEM ▪ XRD ▪ AFM ▪ CLSM ▪ Glovebox ▪ 3D Laser Vibrometer ▪ I-V Curve measurement ▪ UV-vis Spectroscopy .

Theoretical

Photovoltaics ▪ Fluid Mechanics ▪ Charge Transfer ▪ Thermoelectric ▪ Thin Film Fabrications ▪ Droplet ▪ Wetting and Surface Science ▪ Quantum Mechanics ▪ Soft Matter Physics ▪ Statistical Mechanics ▪ Quantum Chemistry ▪ Material Science ▪ Nanotechnology.

Interests

- Future Energy System
- AI4Science: Digitalization and AI integration for New Material RnD
- Future PV Materials and Industrialization
- Digital Twins
- Energy Surplus Building
- Autonomous Laboratories
- Garden & Landscape

Laboratory of Thin Liquid and Solid Films and Photovoltaics of UM-SJTU — 09/2017 - 03/2020
Lab Member, Safety Coordinator, Technical Engineer

Investigation of droplet impact on heated liquid surface. Developing a low-cost and scalable droplet-based thin film fabrication methods and instrument for printing of advanced materials. Droplet impact, spreading, and wetting of Perovskite and PEDOT: PSS and their application in the printing of thin film solar cells.

Frontier in Innovative Technology (FIT) Young Investigator Symposium at UM-SJTU — 09/2019
Participant / Volunteer

Participate in the conference focusing on various advance technology in energy and health. Volunteer in the event organization and reception of invited guest.

The 3rd International RenDanHeYi Model Forum — 09/2019
1-on-1 bilingual interpreter for VIP experts and leaders

Personal assistant to Nobel Laurates Economist, Management thinking leaders attending the conference. Liaison with event organizer.

The 1st Material Surface & Interface International Academic Forum - Jiangsu University of Technology — 04/2019
Invited speaker / Volunteer Facilitator

Invited speaker in the lecture series session. A volunteer facilitator to bridge the communication between invited VIP experts with the organizing committee of the host university.

SJTU Global Engagement Program – Bangladesh Challenge — 11/2018 - 02/2019
Coordinator team member and field trip team leader

Work with the other coordination team members for the planning of the project. Lead team members in the field trip to Thailand and Bangladesh.

University of Michigan – Shanghai Jiao Tong University Graduate Student Union — 07/2018 - 06/2019
Deputy Chairman

Lead the departments of art and sports and coordinate various events in the college.

Michigan China Center — 08/2018 - 09/2018
Market Analyst & Program Assistant

Perform market analysis on the topic of autonomous driving cars. Handle local business development task in China for trade partner from Michigan States.

Indonesian Students' Association in China (Under the direct jurisdiction of the Indonesian Embassy) — 03/2014 - 05/2015
Nationwide Headquarter Deputy Treasurer and Founder & First Chairman of the Qingdao Branch

Established new organization branch in Qingdao city and served more than 12,000 Indonesian students studying in China.

- Orphan Education
- Culinary and Pastry
- Swimming, Table Tennis, Tennis, Bowling, Volleyball, Ultimate Frisbee

Test Scores

- GRE : 314
- TOEFL : 107
- IELTS : 7.0
- HSK 6 : 242
- HSK 5: 259

Contact

Tongchuan Rd. 1422,
Putuo District,
Shanghai, P.R.China

+86 1522 123 5523

domi@dominikusbrian.com

github.com/dominikusbrian

Selected Awards & Honors

New York University (NYU) Shanghai Doctoral Fellowship — 2020 - 2024

China Scholarship Council Master degree Full Scholarship Type A for International Student — 2017-2020

3rd prize winner - China Global Television Network (CGTN) Belt and Road essay contest — 2019

KLA-Tencor Scholarship of UM-SJTU Joint Institute ; U21/PwC Innovation Challenge-Global Finalist — 2018

Publications

9. **Dominikus Brian**, Xiang Sun*, Charge Transfer Landscape Manifesting Structure-Rate Relationship in the Condensed Phase via Machine Learning, *J. Phys. Chem. B*, 125, 13267-13278 **(2021)** .
8. **Dominikus Brian**, Xiang Sun*, Generalized Quantum Master Equation: A Tutorial Review and Recent Advances, *Chin. J. Chem. Phys.* 34, 5, 497-524 **(2021)**.
7. Zhubin Hu, **Dominikus Brian**, Xiang Sun*, Multi-State Harmonic Models with Globally Shared Bath for Nonadiabatic Dynamics in the Condensed Phase, *J. Chem. Phys.* 155, 124105 **(2021)**.
6. **Dominikus Brian**, Zengkui Liu, Barry D. Dunietz, Eitan Geva, Xiang Sun*, Three-State Harmonic Models for Photoinduced Charge Transfer, *J. Chem. Phys.* 154, 174105 **(2021)**.
5. **Dominikus Brian**, Xiang Sun*, Linear-Response and Nonlinear-Response Formulations of the Instantaneous Marcus Theory for Nonequilibrium Photoinduced Charge Transfer, *J. Chem. Theory Comput.* 17, 2065-2079 **(2021)**.
4. **Dominikus Brian**, Morteza Eslamian*, Design and Development of a Coating Device: Multiple-Droplet Drop-Casting (MDDC-Alpha), *Rev. Sci. Instrum.*, 91, 033902 **(2020)**.
3. **Dominikus Brian**, Morteza Eslamian*, Analysis of Impact Dynamics and Deposition of Single and Multiple PEDOT: PSS Solution Droplets, *Exp. Fluids*, 60, 1-15 **(2019)**.
2. **Dominikus Brian**, Mohammad-Reza Ahmadian-Yazdi, Claire Barratt, Morteza Eslamian*, Impact Dynamics and Deposition of Perovskite Droplets on PEDOT: PSS and TiO2 Coated Glass Substrates, *Exp. Therm. Fluid Sci.*, 105, 181-190 **(2019)**.
1. Nadia Gholampour, **Dominikus Brian**, Morteza Eslamian*, Tailoring Characteristics of PEDOT: PSS Coated on Glass and Plastics by Ultrasonic Substrate Vibration Post Treatment, *Coatings*, 8 (10), 337 **(2018)**.

*Corresponding author