Mr. Bin CAO (曹斌)

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Education

2023.9 - Present	**Ph.D. in Advanced Materials, Hong Kong University of Science and Technology(GZ)**
2020.9 - 2023.7	**M.Sc. in Materials Informatics, Shanghai University**
2016.9 - 2020.7	**B.Eng. in Mechanical Engineering, Beijing University of Chemical Technology**

Research & Experience

- Research on Physical informed Machine learning algorithms. 2020.9 - Present
- Research on AI-driven structural characterization and analysis of crystalline materials. 2020.9 - Present

Publications

- Lei T, **Cao B**, Fu W, et al. A Li-rich layered oxide cathode with remarkable capacity and prolonged cycle life[J]. Chemical Engineering Journal, 2024: 151522.
- **Cao B**, Su T, Yu S, et al. Active learning accelerates the discovery of high strength and high ductility lead-free solder alloys[J]. Materials & Design, 2024: 112921.
- Ma J†, **Cao B**†, Dong S, et al. MLMD: a programming-free AI platform to predict and design materials[J]. npj Computational Materials, 2024, 10(1): 59.
- Sun L, **Cao B**, Ma Q, et al. Machine learning-assisted composition design of W-free Co-based superalloys with high γ′-solvus temperature and low density[J]. Journal of Materials Research and Technology, 2024, 29: 656-667.
- Wei Q†, **Cao B**†, Yuan H†, et al. Divide and conquer: Machine learning accelerated design of lead-free solder alloys with high strength and high ductility[J]. npj Computational Materials, 2023, 9(1): 201.
- Qin Y, **Cao B**, Zhou X Y, et al. Orthorhombic (Ru, Mn) 2O3: A superior electrocatalyst for acidic oxygen evolution reaction[J]. Nano Energy, 2023, 115: 108727.
- Wei Q, **Cao B**, Deng L, et al. Discovering a formula for the high temperature oxidation behavior of FeCrAlCoNi based high entropy alloys by domain knowledge-guided machine learning[J]. Journal of Materials Science & Technology, 2023, 149: 237-246.
- **Cao B**, Yang S, Sun A, et al. Domain knowledge-guided interpretive machine learning: formula discovery for the oxidation behavior of ferritic-martensitic steels in supercritical water[J]. Journal of Materials Informatics, 2022, 2(2): 4.

Invited Talks

- **Cao B**, oral report at First National Workshop on Data-Driven Computational Mechanics , “Domain knowledge-guided interpretive machine learning: formula discovery for the oxidation behavior of ferritic-martensitic steels in supercritical water”, May. 19-21, 2023, DaLian, LiaoNing, CHINA

Awards & Honors

- National Scholarship, China, 2022-2023
- Outstanding Graduate of Shanghai University, 2023

Employment History

2023.3-2023.9 Articial Intelligence Institute, Zhejiang Lab, Intern Researcher
Conducting research on transfer learning to establish a robust transfer learning framework named Btrlearn

Patents & Softwares

- **Cao B**, et al., A method for calculating oxidation kinetic index. 2023111543212. 2023.
- **Cao B**, et al., Alloy abnormal data analysis method based on Gaussian process regression. 202210529720.1. 2022.
- **Cao B**, et al., X-ray refinement method based on statistical modelling. 202210408314.X. 2022.
- **Cao B**, et al., Bayesian global optimization material oriented design software. 2023. [2023SR0549316].
- **Cao B**, et al., KMMRT : Kernel mean matching transfer regression software. 2023. [2023SR0723273].
- **Cao B**, et al., Btrlearn :A Transfer learning working framework. 2023. [2023SR0525555].
- **Cao B**, et al., WPEM : Powder X-ray whole profile fitting algorithm. 2022. [2022SR0241080].
- **Cao B**, et al., TCGPR : Gaussian process regression anomaly data analysis software. 2022. [2022SR1423038].
- **Cao B**, et al., Bgolearn : Bayesian global optimization in materials design. 2022. [2022SR1481726].
- **Cao B**, et al., TCLR : Linear Regression Tree Classifier. 2023. [2021SR1951267].

Service

- Member of China Materials Research Society (C-MRS).
- Member of Chinese Crystallographic Society (CCrS).