

Jinsong Xia

Research Scientist | Caltech

+1 (626) 692-2633 @ j.xia@caltech.edu (work); jinsong.xia@outlook.com (personal) jinsongxia.com Pasadena, CA 91125

SUMMARY

Research Scientist with a PhD in Mining Engineering, a BS and a MS in Materials Science and Engineering, and extensive experience in renewable energy, solar fuels, electrochemistry, and advanced materials. Proven expertise in designing and executing independent research projects, developing innovative solutions for carbon capture and energy applications, and metal recovery. Adept at grant proposal preparation, research publication, and collaboration with diverse teams.

EXPERIENCE

Research Scientist

California Institute of Technology - Caltech

- 10/2023 - Present Pasadena, CA, USA
- Leads and conducts independent research projects focusing on renewable energy and solar fuels, contributing to advancements in sustainability.
 - Design and fabricate catalyst materials (metal oxides, nanoparticles, nano composites) for applications in carbon capture and conversion.
 - Prepares grant proposals and research papers, and actively collaborates with internal teams and external partners.

Casual Research Associate

Queen's University

- 07/2023 - 09/2023 Kingston, ON, Canada
- Designed and executed independent research projects on metal recovery.
 - Authored and published research papers.

Teaching Fellow

Queen's University

- 09/2022 - 12/2022 Kingston, ON, Canada
- Held full responsibility for teaching MNTC P05 Foundational Physics, including developing the syllabus, delivering lectures, and assessing student performance.

Teaching Assistant

Queen's University

- 05/2020 - 04/2022 Kingston, ON, Canada
- Assisted in teaching multiple undergraduate courses, including MINE 268, CHEM 112, APSC 100, MNTC 306, MINE 422, and CHEM 113.

Formulation Design Engineer

Giti Tire R&D Center

- 11/2018 - 05/2019 Hefei, Anhui, China
- Designed innovative tire compounds for commercial passenger vehicles, contributing to product development cycles.
 - Engineered and executed lab-scale experiments and supervised plant-scale operations, ensuring quality and efficiency.
 - Collaborated effectively with cross-functional teams and external partners on R&D projects.

SKILLS



Research & Development

Metal Extraction and Separation, Renewable Energy Systems, Energy Storage, Electrodialysis, Carbon Capture, Electrochemistry.



Materials Science & Engineering

Materials Selection and Design: rationally select and design materials for target applications.
Materials Synthesis: Metal oxides, metal sulfides, porous carbon, graphene, core-shell structured materials, nanocomposites.
Characterization: XRD, SEM, TEM, XPS, FT-IR, BET, AAS, MPAES, IC, Isotope analysis, etc.



Technical Analysis & Presentation

Data Acquisition and analysis, Technical Presentation, Grant Proposal Writing, Research Paper Publication, Data Analysis, Experimental Design and Execution.



Leadership & Mentoring

Student supervision & mentoring, Course Instruction, Curriculum development

EDUCATION

PhD, Mining Engineering

Queen's University

09/2019 - 06/2023 Kingston, ON, Canada

MS, Materials Science and Engineering

Hainan University

09/2015 - 06/2018 Haikou, Hainan, China

BS, Materials Science and Engineering

Hainan University

09/2011 - 06/2015 Haikou, Hainan, China

AWARDS

Margaret Anderson Graduate Scholarship

Queen's University, 08/2022

Pickles Family Scholarship

Queen's University, 03/2022

Dean's Teaching Assistant Award

Queen's University, 06/2021

Outstanding Graduate

Hainan University, 06/2018

SELECTED JOURNAL PUBLICATIONS

Sustainable Technologies for the Recycling and Upcycling of Precious Metals from E-waste

Science of the Total Environment

Jinsong Xia*, Ahmad Ghahreman

📅 2024 🔗 <https://doi.org/10.1016/j.scitotenv.2024.170154>

Core-Shell Structured Fe₃O₄@CuS for Effective Gold Capture and Recovery

ACS Applied Nano Materials

Jinsong Xia*, Ahmad Ghahreman

📅 2023 🔗 <https://doi.org/10.1021/acsanm.3c01772>

Platinum Group Metals Recycling from Spent Automotive Catalysts: Metallurgical Extraction and Recovery Technologies

Separation and Purification Technology

Jinsong Xia*, Ahmad Ghahreman

📅 2023 🔗 <https://doi.org/10.1016/j.seppur.2023.123357>

Ultra-efficient and Selective Recovery of Au(III) Using Magnetic Fe₃S₄/Fe₇S₈

Separation and Purification Technology

Jinsong Xia*, Julia Twinney, Rajashekhar Marthi, Ahmad Ghahreman

📅 2023 🔗 <https://doi.org/10.1016/j.seppur.2022.122611>

A Review on Adsorption Mechanism of Gold Cyanide Complex onto Activation Carbon

Journal of Industrial and Engineering Chemistry

Jinsong Xia*, Rajashekhar Marthi, Julia Twinney, Ahmad Ghahreman

📅 2022 🔗 <https://doi.org/10.1016/j.jiec.2022.04.014>

Efficient Gold Recovery from Cyanide Solution Using Magnetic Activated Carbon

ACS Applied Materials & Interfaces

Jinsong Xia, Harshit Mahandra, Ahmad Ghahreman

📅 2021 🔗 <https://doi.org/10.1021/acsami.1c13920>

Three-dimensional porous graphene-like sheets synthesized from biocarbon via low-temperature graphitization for a supercapacitor

Green Chemistry

Jinsong Xia, Na Zhang, Shaokun Chong, De Li, Yong Chen, Chenghua Sun

📅 2018 🔗 <https://doi.org/10.1039/C7GC03426A>

Electrostatic-Interaction-Assisted Construction of 3D Networks of Manganese Dioxide Nanosheets for Flexible High-Performance Solid-State Asymmetric Supercapacitors

ACS Nano

Na Liu, Yanli Su, Zhiqiang Wang, Zhen Wang, Jinsong Xia, Yong Chen, Zhigang Zhao, Qingwen Li, Fengxia Geng

📅 2017 🔗 <https://doi.org/10.1021/acs.nano.7b02344>

🔗 <https://scholar.google.com/citations?user=vpvpXvsAAAAJ&hl=en&oi=ao>

Please see my google scholar profile for more detailed publications.

PATENT

A method of preparing three-dimensional porous graphene sheets and its application

CN108002370A

Yong Chen, Jinsong Xia, Chenhua Sun

📅 2018

🔗 <https://patents.google.com/patent/CN108002370A/zh>

VOLUNTEERING

Guest Editor

Sustainability, MDPI

📅 2025

From Fossil Fuels to Clean Energy: Mapping the Transition, Innovations and Hurdles

https://www.mdpi.com/journal/sustainability/special_issues/2TOTYOL507

Journal Reviewer

Selected journals

- Nature Communications
- Journal of Materials Chemistry A
- ChemComm
- Inorganic Chemistry Frontiers
- Desalination
- Chemical Engineering Journal
- Journal of Colloid and Interface Science
- Separation and Purification Technology
- Materials Today Chemistry
- Hydrometallurgy
- Journal of Water Process Engineering

MANAGEMENT EXPERIENCE

Manage Research Equipment

Hainan University

📅 09/2016 - 06/2018 📍 Hainan, Haikou, China

- Manage, operate, and train users on several equipment in the lab, including DXR Raman Imaging Microscope, Quantachrome BET adsorber.

Supervise Undergraduate Research Assistant

Queen's University

📅 05/2021 - 12/2021 📍 Kingston, ON, Canada

- Train the RA with experimental and research skills in hydrometallurgy, metal extraction and recovery, write and publish research papers.

Supervise Undergraduate Research Assistant

Caltech

📅 02/2025 - 05/2025 📍 Pasadena, CA, USA

- Train the RA with experimental and research skills in carbon capture, bipolar membrane based electrodialysis system, catalyst synthesis.