黄嘉懿 简历

个人基本情况

- 出生年月：2003 年 4 月
- 籍　　贯：上海市
- 民　　族：汉族
- 政治面貌：共青团员
- 电子邮箱：jiangnanlaosheng@sjtu.edu.cn

教育背景

上海交通大学

材料科学与工程本科，2021 年 8 月至今

加州大学伯克利分校

Technology Leadership Courses，2024 年 7 月-2024 年 8 月

所获荣誉和奖励

2023 年度上海交通大学学业进步奖学金

研究方向

- surface rocessing of metal material
- Material Characion: Electron Back Scatter Diffraction, Transmission Electron Microscopy, Scanning Electron Microscopy, Confocal Microscopy
- Mechanical properties of alloys: hardness, contact angle, friction...

科研经历

1. Laser Shock Surface Patterning of Ti Alloys for the Improvement of Tribological Property

Independent Research, Supervisor: Prof. Bo Mao (SJTU) May 2024-Oct 2024

This research employs the method of direct-laser shock surface patterning(direct-LSSP) to manipulate the performance of titanium in tribological properties and hardness.

- Burnished and polished the pure titanium blocks by sandpaper and SiO2 suspension, and made the surface of these blocks shot by 4 different strengths of laser.
- Tested the hardness, contact angle and coefficient of friction(COF) of pure titanium blocks.
- Used 3D optical profilometer, EBSD and SEM equipment to further explore the change, such as graving and strengthening, of the microstructure of titanium.

2. Study of the Thermal Stability of Microstructure of Mg Alloys Processed by Laser Shock Peening

Research Assistant, Supervisor: Prof. Bo Mao (SJTU) Jun 2024-Sep 2024

This research explores the thermal stability of LSP-processed Mg alloy(AZ31B).

- Prepared samples by grinding and polishing, followed by shooting them under the laser.

- Used the EBSD equipment to get the microstructure characterization of these Mg alloy pieces to compare the LSP processed pieces with the unprocessed pieces.
- Assisted in analyzing the movement of grain boundary migration and explored the in-depth reason for the improvement of thermal stability of the alloy pieces by static annealing.

3. Cloning Nacre's 3D Interlocking Skeleton Titanium Matrix Composite Feb 2023-Apr 2024

Group Leader, Supervisor: Prof. Yuanfei Han (SJTU)

- Proposed to build a new bionic titanium alloy composite based on the shell structure, on the basis of the supervisor's existing research.
- Collected different kinds of titanium alloy microsheets and self-assembled nanolamellar composites.
- Carried out metallographic analysis and mechanical properties test according to the material gradient structure to select the titanium alloy material with the best performance.
- Explored the potential applications of composites according to their characteristics, and wrote relevant papers and applied patents.

4. Systematic Analysis of Application and Manufacturing Methods of Advanced Titanium Alloys

Investigators, Supervisor: Prof. Jaime *Marian (UCLA)* Sep 2022

- Mastered data processing mapping with MATLAB, deep learning modeling and simulation of professional data with Simulink.
- Investigated the development status of titanium alloys, focusing on several most common titanium alloys to analyze their properties, composition, function, and potential applications.
- Designed titanium alloys meeting special conditions and demonstrated the feasibility of their composition through software simulation modeling.
- Studied the steps and considerations for designing new alloys and organized them into a paper.
- Wrote an English review, which has been accepted by ACMME2023.

5. Research on the Repair of Cranio-maxillofacial Tissue Defects by a Novel High-strength Protein-based Active Hydrogel Sep 2023-Jun 2024

Group Leader, Supervisor: Prof. Xudong Wang (The Ninth People's Hospital)

- Introduced BCN element into BSA hydrogel and tested its mechanical properties to analyze its feasibility in bone defect healing.
- Verified the biological properties of BCN@BSA hydrogel by cell nuclear staining and CCK8 cytological tests.
- Applied the hydrogel with the best test effect to the site of cranial bone defect in rats to test its application effect on living organisms.
- Summarized the results of the experiment into a paper, passed the defense, and participated in domestic academic conferences.

学术论文

1. **Jiayi Huang**, Systematic Analysis of Application and Manufacturing Methods of Advanced Titanium Alloys, accepted by ACMME2023
2. Qian Liu, Wanting Sun, Shuangjie Chu, **Jiayi Huang**.et al. Quasi-in-situ EBSD Study of the Thermal Stability of Gradient Twinning Microstructure of an AZ3lB Magnesium Alloy Processed by Laser Shock Peening, submitted to Materials Characterization on August 24, 2024. (Under Review)
3. **Jiayi Huang**, Qian Liu, Laser Shock Surface Patterning of Ti Alloys for the Improvement of Tribological Property, will be submitted to International Journal of Machine Tools and Manufacture.