

Curriculum Vitae

Personal Information

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Education

Sept.2021 -	Beihang University	Mechanical Engineering
Present	Graduate	GPA: 90.58/100 (rank: 1/190)
Sept.2017-	Beijing University of Technology	Mechanical Engineering
Jul.2021	Bachelor's degree	GPA: 90.42/100 (rank: 4/111)

Research Experience

Science Center for Gas Turbine Project (P2022-AB-IV-002-002) Sept. 2021-present

Precision manufacturing of composite materials

Researcher

- Designed water-guided laser machining experiments, employed machine vision methods to extract machining quality characteristic parameters, and established correlations with various machining parameter combinations.
- Developed a theoretical model for waterjet-guided laser machining of SiC/SiC composite materials in Comsol Multiphysics, and validated it with actual machining results.
- Utilized neural networks to predict machining outcomes and employed multi-objective optimization algorithms to determine the optimal combination of machining parameters.
- Investigated the material removal mechanisms of SiC/SiC composite materials under femtosecond and waterjet-guided laser conditions through various observation methods.

Professional Skills

- ✧ Familiarization with mechanical design and mechanical manufacturing (mainly the laser drilling process)
- ✧ Proficiently utilize the PyTorch framework to develop and train neural network models aimed at optimizing machining parameters for improved processing efficiency and quality
- ✧ Usage of some CAD, CAM, and CAE software skillfully, especially Autodesk Inventor, SOLIDWORKS, NX, AutoCAD, and Comsol multiphysics.

Publication

- **Mengxuan Gao**, Songmei Yuan, *et al.* "Optimization of Processing Parameters for Waterjet-Guided Laser Machining of SiC/SiC Composites". *Journal of Intelligent Manufacturing*, **Q1**, **IF = 8.3 (Accepted)**
- Ning Zhou, Songmei Yuan, **Mengxuan Gao**, *et al.* Investigations on the oxidation behavior and removal mechanism of SiC/SiC composites by multi-pulse femtosecond laser ablation. *Journal of Materials Research and Technology*. **Q1**, **IF = 6.4**
(<https://doi.org/10.1016/j.jmrt.2023.08.134>)

- Jiayong Wei, Songmei Yuan, Jiaqi Zhang, Ning Zhou, Wei Zhang, Jiebo Li, Wenzhao An, **Mengxuan Gao**, Yanzhe Fu. *Femtosecond laser ablation behavior of SiC/SiC composites in air and water environment*. **Corrosion Science**. **Q1, IF = 8.3**
(<https://doi.org/10.1016/j.corsci.2022.110671>)
- Jiayong Wei, Songmei Yuan, Jiaqi Zhang, Ning Zhou, Wei Zhang, Jiebo Li, Wenzhao An, **Mengxuan Gao**, Yanzhe Fu. *Femtosecond laser ablation behavior of SiC/SiC composites in air and water environment*. **Journal of the European Ceramic Society**. **Q1, IF = 5.7**
(<https://doi.org/10.1016/j.jeurceramsoc.2022.05.041>)

Patents

- Songmei Yuan, **Mengxuan Gao**, Ning Zhou, Jiaqi Zhang, Jiayong Wei. "The method and device for predicting hole patterns in laser perforation of composite materials" CN115527632A (**Under Review**)
- Songmei Yuan, **Mengxuan Gao**, Jiaqi Zhang, Jiayong Wei, Ning Zhou. "The method and device for determining processing parameters of composite material laser drilling" CN115270616A (**Under Review**)
- Zehuan Zhao, **Mengxuan Gao**, Anni Tong, Tao Zan. "Transformable wheel/transformable wheel conversion device and transformable wheel" CN115270616A (**Under Review**)
- Jianhua Wang, **Mengxuan Gao**, et al. "A hybrid humanoid-like five-finger mechanical hand with a combination of rigidity and flexibility" CN111469156B (**Granted**)
- Xuan Jiang, Jin Zhou, **Mengxuan Gao**, Shaofei Wei, Zhengjie Wei, et al. "Non-slip sleeve and colonoscopy handle" CN111657841B (**Granted**)
- Jianhua Wang, **Mengxuan Gao**, et al. "A lunar rover designed to assist in constructing a lunar base and collecting lunar rock samples" CN110104212A (**Granted**)
- Shuwen Sun, Mingrui Luo, Chaoyang Shi, Jun Sun, **Mengxuan Gao**, Zehui Hong. "An automated device and control method for achieving large-scale time-lapse photography." CN109061998A (**Granted**)

Honors & Awards

- ✓ 2021-2023 First class scholarship in Beihang University
- ✓ 2018-2020 Outstanding Learning Award in Beijing University of Technology
- ✓ 2020 Autodesk National College Students Mechanical Products Digital Design Competition **First Prize (National Award)**
- ✓ 2019 China Service Robot Competition **First Prize (National Award)**
- ✓ 2019 Autodesk National College Students Mechanical Products Digital Design Competition **First Prize (National Award)**
- ✓ 2018 The 4th Beijing Engineering Design Expression Competition, Individual and Group **First Prize**