

CHIA-HUNG HUNG

Toomey Hall, 400 W 13th St. Missouri University of Science and Technology Rolla, MO 65409, U.S.A.

[Personal Website](#); hungch@umsystem.edu; Phone#: +1-573-305-0902;

EDUCATION

- **Ph.D. Mechanical Engineering** **Missouri University of Science and Technology**, May. 2021
Dissertation: Fabrication of 304L Stainless Steel and Aluminum Parts by Laser-Foil-Printing Additive Manufacturing and Process Automation
- **M.S. Mechanical Engineering** **National Taiwan University of Science and Technology**, 2014
Thesis: A Study of Nitinol Biliary Stent Fabrication by Femtosecond Laser Ablation Process
- **B.S. Mechanical Engineering** **National Taiwan University of Science and Technology**, 2011

TEACHING EXPERIENCE

- **Instructor of “Dynamics”** **Missouri S&T**, 01/2021- 05/2021
 - Developing course materials (syllabus, slides, assignments, quizzes, mid-term exam, and final exam), lecturing, grading
 - Teaching a class of 48 students on principles of mechanics (Newton’s Law, energy and momentum conservation methods, etc.) and apply them to modeling and analysis of engineering systems
- **Lab Instructor of “Computer Aided Design Theory and Practice”** **Missouri S&T**, 08/2020-12/2020
 - Course Evaluation: 3.8/4.0
 - Teach >50 students on using CAD software (NX and SolidWorks) to design 3D objects by modeling and assembling components, and conduct finite element analysis
- **Teaching Assistant of “Control System Lab”** **Missouri S&T**, 08/2017-12/2020
 - Course Evaluation: 3.6/4.0
 - Teach >100 students on using LabVIEW for data acquisition, manipulation, and system control; and writing codes to control programmable logic controllers (PLC)

Honors and Awards

- **Nomination for Midwestern Association for Graduate Schools Excellence in Teaching Award** 2021
Nomination from the Department of Mechanical Engineering to Missouri S&T Campus

[Chia-Hung Hung’s Teaching Portfolio](#) for Teaching Award Nomination.

RESEARCH EXPERIENCE

- **Research Assistant, Innovative & Smart Additive Manufacturing Lab** **Missouri S&T**, 2016-2021
 - **Laser Additive Manufacturing R&D**
 - Investigated laser foil printing (LFP) and selective laser melting (SLM) processes
 - Set up a problem statement, hypothesis, objectives, and plans (DOE) for LFP process optimization
 - Experimentally generated test data and analyzed the data to conclude the processability
 - Fabricated 3D metallic parts with high strength and ductility
 - Characterized and analyzed 50+ specimens for mechanical properties, microstructure, failure analysis

- **Laser Additive Manufacturing (LAM) Process Automation**
 - Developed and built an automated laser 3D printing system through the integration of mechanical/electrical/optical hardware and software (including LinuxCNC and LaserDESK)
- **Visiting Scholar,** **Missouri S&T, 2013-2014**
 - Enhanced femtosecond laser process efficiency on glass removal by decomposing water into oxygen and hydrogen
 - Set up a dual-laser optical system to enhance material removal rate
- **Research Assistant,** **Industrial Technology Research Institute, Taiwan, 2011-2013**
 - Optimized process parameters to enhance laser removal efficiency in fabrication of biomedical device

WORKING EXPERIENCE

- **Laser Application Engineer,** **Laser mechanisms Taiwan Ltd., Taiwan 2011-2013**
 - Optimized laser process parameters on ceramics and sapphire for the fabrication of Passive Components and cover glass of cellular phone camera

PUBLICATIONS

- **Published Peer-Reviewed Journal Papers:**

1. **Chia-Hung Hung**, Wei-Ting Chen, M. Hossein Sehat, Ming C. Leu. The effect of laser welding modes on mechanical properties and microstructure of 304L stainless steel parts fabricated by laser-foil-printing additive manufacturing. *International Journal of Advanced Manufacturing Technology*. (2020)
2. **Chia-Hung Hung**, Yingqi Li, Austin Sutton, Wei-Ting Chen, Xiangtao Gong, Heng Pan, Hai-Lung Tsai, Ming C. Leu. Aluminum parts fabricated by laser-foil-printing additive manufacturing: processing, microstructure, and mechanical properties. *Materials*, Vol. 13, 1-13. (2020)
3. Tan Pan, Sreekar Karnati, Yunlu Zhang, Xinchang Zhang, **Chia-Hung Hung**, Lan Li, Frank Liou, Experiment characterization and formulation estimation of tensile properties for selective laser melting manufactured 304L stainless steel. *Materials Science and Engineering: A*, Vol. 79, 1-12. (2020)
4. **Chia-Hung Hung**, Austin Sutton, Yingqi Li, Yiyu Shen, Hai-Lung Tsai, Ming C. Leu. Enhanced mechanical properties for 304L stainless steel parts fabricated by laser-foil-printing additive manufacturing. *Journal of Manufacturing Processes*, Vol. 45, 438-446. (2019)
5. Yingqi Li, Yiyu Shen, **Chia-Hung Hung**, et al. Additive manufacturing of Zr-based metallic glass structures on 304 stainless steel substrates via V/Ti/Zr intermediate layers. *Materials Science and Engineering*, Vol. 729, 185-195. (2018)
6. **Chia-Hung Hung**, Fuh-Yu Chang, Curve micromachining on the edges of nitinol biliary stent by ultrashort pulses laser. *Optics and Laser Technology*, Vol. 90, 1-6. (2017)
7. **Chia-Hung Hung**, Fuh-Yu Chang, Tien-Li Chang, Yu-Ting Chang, Kai-Wen Huang, Po-Chin Liang. Micromachining NiTi Tube for Use in Medical Devices by Using a Femtosecond Laser. *Optics and Lasers in Engineering*, Vol. 66, 34-40. (2015)

- **Peer-Reviewed Journal Papers in Review:**

1. **Chia-Hung Hung**, Tunay Turk, M. Hossein Sehat, Ming C. Leu. Development and experimental study of an automated laser-foil-printing additive manufacturing system. Submitted to *CIRP Annals - Manufacturing Technology*.

- **Published Conference Papers:**

1. **Chia-Hung Hung**, Yiyu Shen, Ming C. Leu, Hai-Lung Tsai. Mechanical Properties of 304L Parts Made by Laser-Foil-Printing Technology. *Solid Freeform Fabrication Symposium*. (2017)
2. **Chia-Hung Hung**, Fuh-Yu Chang, Tien-Li Chang, Yu-Ting Chang, Kai-Wen Huang, Po-Chin Liang.

Femtosecond laser nonlinear ablation process of biliary nitinol stent for cholangiocarcinoma. *Advanced Materials Research*, Vol. 699, 859-63. (2013)

- **Published E-Books:**

1. Ming C. Leu, **Chia-Hung Hung**, Wenjin Tao, Amir Ghazanfari, Krishna Kolan. *NX for Engineering Design*. (2021)

RESEARCH SKILLS

- **Opto-Mechatronic System Automation Integration:** integrate dual lasers, motion stages, galvo-scanner, into an additive manufacturing system
- **Materials Processing:** laser materials processing, laser additive manufacturing, laser welding
- **Computer-Aided Design:** SOLIDWORKS, NX, AutoCAD
- **Design of Experiments:** ANOVA, Taguchi analysis
- **Material Characterization:** scanning electron microscopy (SEM), X-ray diffraction (XRD), electron backscattered diffraction (EBSD), energy-dispersive X-ray spectroscopy (EDX),
- **Properties Measurement and Failure Analysis:** tensile test, microhardness
- **Automation Control:** programmable logic controller (PLC), LabVIEW, LinuxCNC.
- **Thermal/Stress Simulation:** ANSYS, COMSOL
- **Data Analysis Software:** MATLAB, C++, Microsoft office, Origin, JMP