

Hsueh-Fen (Karen) Chien

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Education

University of Toronto, Master of Applied Science **2012 – 2014**
Major: Materials Science and Engineering

University of Toronto, Bachelor of Applied Science **2008 – 2012**
Major: Materials Science and Engineering.
Graduate with Honours

Fraser Heights Secondary School, Surrey, B.C., Canada **2005 – 2008**

Publication

W.T. Chen, R. T. Wu and K. Chien et al., "*Synthesis of an Oxidation Resistant Coating for Ni-based High Temperature Structural Materials by Dip Coating*", Applied Mechanics and Materials Journal, Volume 187, 2012, pp. 251-254.

Engineering Experience

Strain Aging and Strain Path Effects on Steels, University of British Columbia **Sep. 2014 – Sep. 2016**
PhD Thesis Project

- Investigate the missing yield point when a circular steel tube experiences an internal hydraulic pressure as well as an external bending force.
- Study the stress-strain behavior after strain aging.

Alumina Reinforced Aluminum Microtruss, University of Toronto **Sep. 2012 – Aug. 2014**
Master Thesis Project (*In collaboration with National Institute for Materials Science (NIMS), Japan*)

- Investigate the failure mechanisms of aluminum microtruss reinforced with alumina structural coating.
- Identify the instability that initiated the microtruss failure.
- Characterization of microtrusses is performed at NIMS facilities in summer of 2013

Steel Refining, University of Toronto **Sep. 2011 – Apr. 2012**
Engineering Thesis Project

- Analyzed the physical and chemical properties of the red mud and adjusted its composition for the steel refining application.
- Evaluated the flux effect of the red mud on the dephosphorization and the desulphurization processes for steel refining.

Thermal Barrier Coating, NIMS, Japan **Jun. 2011 – Aug. 2011**
Summer Research Internship **May 2010 – Aug. 2011**

- Worked at the High Temperature Materials Center on topics related to thermal-resistant coating technologies for aerospace applications
- Carried out independent research activities (literature review and experiments) in the laboratory
- Developed effective communication skills through writing reports and presenting the progress in weekly meeting

Good Life Fitness, University of Toronto
Engineering Design Project

Jan. 2009 – Apr. 2009

- Worked with client to design a workout (exercise) management system to be used by both the instructors and members of Good Life Fitness.

Compact Fluorescent Lamp (CFL) Recycle System, University of Toronto
Engineering Design Project

Sep. 2008 – Dec. 2008

- Designed a conceptual system for recycling CFL and finally submitted the conceptual design specification to the client.

Relevant Skill

- Microsoft office: word, excel and power point
- Optical microscopy, X-Ray diffraction and Scanning Electron Microscopy (SEM): Imaging, EDX, EBSD
- Mechanical testing: Tensile, Compression, 3-point bending, Micro-hardness and Nano-indentation
- Heat treatments: Induction and Air furnaces and Cyclic oxidation rigs
- Coating technique: Anodizing and Dip-coating
- Modelling and analysis: Matlab, Flow-3D, Origin and ImageJ
- Carbon/Sulphur exterminator

Teaching Experience

Jan. 2016 – Apr. 2016

Lab Teaching Assistant (MTRL381: Structures and Properties of Engineering Materials),
University of British Columbia

- Prepared lab materials and set up lab equipment. Demonstrated and supervised the students on polishing, etching and hardness test on various grades of steels. Marked the lab reports and gave feedback to students.

Sep. 2015 – Dec. 2015

Lab Teaching Assistant (APSC279: Applied Science), University of British Columbia

- Introduced the students to: tensile testing of metals, deformation and recrystallization, fatigue and brittle fracture, ceramics and concrete, and polymers and composites. Demonstrated the experiment procedures and supervised the students during the lab sections.

Jan. 2014 – Apr. 2014

Lab Teaching Assistant (MSE101: Introduction to Materials Science), University of Toronto

- Introduced the students to tensile testing by using portable tensile testing machines to test metal and polymer specimens. Demonstrated scanning electron microscopy to the students by showing real vs. counterfeit Toronto Transit Commission tokens, housefly and human hair. Introduced the students to crystal structures and crystallography using 3D models. These lab activities included hands-on experiences for the students.

Sep. 2013 – Dec. 2013

Lab Teaching Assistant (MSE459: Nanostructured Materials' Synthesis), University of Toronto

- Introduced the students to use differential scanning calorimetry to identify grain growth in nano materials such as nano-cobalt or nano-nickel. Graded reports and provided feedback to the students.

Jan. 2013 – Apr. 2013

Lab Teaching Assistant (MSE550: Structural Nanomaterials), University of Toronto

- Performed three-point bending test on alumina ceramics and anodized aluminum microtrusses to examine the effect of volume on survival probability of ceramic. Marked the reports and gave comments to the students.

Sep. 2012 – Dec. 2012

Tutorial Teaching Assistant (MSE101: Introduction to Materials Science), University of Toronto

- Designed and organized the teaching materials for the tutorial sessions. Designed and graded assignments and quizzes as well as prepared review sessions for the students.

References available upon request