TZU-SHUN YANG

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PERMANENT ADDRESS
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OBJECTIVE:

Seeking for full-time **process engineer**, **material analyst**, and **research scientist** position utilizing my experience in **microelectronic fabrication**, **materials characterization**, and **magnetic analysis**.

EDUCATION

University of Florida — *Gainesville, FL*
*Master of Science in **Electrical and Computer Engineering*** — *Aug 2010*
Concentration: Devices
GPA: 3.74/4.00

University of Florida — *Gainesville, FL*
*Master of Science in **Materials Science and Engineering*** — *May 2009*
Concentration: Electronic Materials
GPA: 3.81/4.00

National Central University (NCU) — *Taoyuan, Taiwan*
*Master of Science in **Mechanical Engineering*** — *Jun 2005*
Concentration: Advanced Materials and Precise Manufacturing
GPA: 4.00/4.00

National Central University (NCU) — *Taoyuan, Taiwan*
*Bachelor of Science in **Mechanical Engineering*** — *Jun 2003*
Materials Program, Interdisciplinary Courses of Materials in Metal, Electronic, and Polymer

PROFESSIONAL EXPERIENCE

Interdisciplinary Microsystems Group (UF) — Gainesville, FL
Research Assistant — *Jan 2009-Aug 2010*

- Researched the application of magnetic ***Micro-Electro-Mechanical Systems*** (MEMS)
- Accumulated project design and DOE methodology experience
- Experienced in semiconductor wafer fabrication processes and tools
- Trained to manipulate instruments in photolithography, plasma, metrology, and deposition bays
- Worked on the performance of magnetic materials
- Studied on the microstructure and magnetic properties of electroplated Co-Zn thin films
- Developed micro-fabricated magnets in the range of 0.1 mm to 1 mm

Project:

Fabrication and characterization of parylene-bonded Nd–Fe–B powder micromagnets

By mixing different diameter size Nd–Fe–B magnetic powder, the higher packing density could be reached to boost the magnetic moments. The parylene coating was used to bond each magnetic powder to further increase the coercivity. With higher magnetic moments and coercivity, the higher energy density could be obtained.

Morphology and Magnetic Properties of Electroplated Co-rich Co-Zn Thin Films

The Zinc was chosen to replace the Platinum due to the similar atomic radius while Co-Pt is a desired permanent magnets but Pt is costly. The correlation between microstructure, magnetic properties, and processing was studied by grain size observation in SEM, coercivity measured by VSM, and current density changed systematically. The lower current density provided less energy to form smaller grain size to enhance the coercivity and energy density.

Major Analytical Instrumentation Center (UF) — Gainesville, FL
Teaching Assistant — *May 2009-Aug 2010*

- Obtained theoretical background and operational experience
- Trained students how to operate ***Scanning Electron Microscope*** (SEM)
- Gained experience in both teaching and learning
- Developed good interpersonal and communication skills
- Enhanced ability to learn new instruments and technologies at a faster pace

Taiwan Semiconductor Manufacturing Company (TSMC) *Hsin-Chu, Taiwan*
Intern, Summer Internship Program *May 2008-Jul 2008*

- Served in ***Research*** and ***Development*** in Advanced Equipment Department
- Researched on Front Opening Unified Pod (FOUP) design and improvement
- Assisted in pattern searching and experiment validation

Automotive Research & Testing Center, the Light Metal Lab (NCU) *Taoyuan, Taiwan*
Research Assistant *Sep 2003-Jun 2005*

- Participated in the research to ***sputter Al-Sc thin film*** to enhance the reflectors for automobile
- Maintained and operated Sputtering, also responsible for issuing certification for Sputtering
- Executed the research for Strengthening Properties of Aluminum Alloys
- Utilized ECAE processing to alter microstructure and enhance mechanical properties
- Sophisticated in microstructure observation by OM and SEM

Project:
Enhancing the Efficiency of the Thin Film Reflectors by Sputtering Al-Sc Alloys
Since the micro-amount addition of Sc could precipitate the Al-Sc compound, the grain size would be restricted due to the precipitation phase on the grain boundary in the bulk Aluminum alloys. The Al-Sc target was fabricated to be sputtered on the substrate, and the enhancement of the reflection was due to the smoother surface from finer grain size and it can be applied to automobile light.

Thesis:
Effect of Equal Channel Angular Extrusion (ECEA) Processing on the Morphology of Primary Phase and Mechanical Properties of Al-7Si-0.35Mg Alloys
The mechanical properties of Aluminum alloys were increased by using the ECAE (Equal Channel Angular Extrusion) processing. The morphology of primary phase could be altered from needle-shaped phase to small, crashed particles, enhancing the mechanical properties significantly due to less break-points distribution.

COMPUTER/INSTRUMENT SKILLS

- TSUPREM, MATLAB, COMSOL, AutoCAD, SolidWorks
- (Film Deposition) Sputter, (Metrology) Profilometer, OM, SEM, EDS, XRD, VSM
  (Photolithography) E-Beam Lithography, Spin Coater, (Plasma) Deep RIE

ACTIVITIES/LEADERSHIP

- *President*, University of Florida Taiwanese Student Association *Apr 2008-Apr 2009*
- *Class Representative*, NCU Thin Film Design & Fabrication *Jan 2004-Jun 2004*
- *Teaching Assistant*, NCU Materials Science *Sep 2003-Jan 2004*
- *President*, NCU The Chinese Institute of Engineers *Sep 2001-Jun 2002*

SCHOLARSHIPS/AWARDS

- Out-of-state tuition waiver from Florida-China Linkage Institute *Aug 2008-May2009*
- Scholarship from The Sing Lung Mechanical Engineering Foundation *Sep 2003-Jun 2004*
- Scholarship from The Cathay Life Insurance Co., Ltd *Sep 2003-Jun 2004*
- Scholarship from The Broadcasting Corp. of China *Sep 2003-Jun 2004*
- Top One Student Chapters of The Chinese Institute of Engineers (CIE), an academic student association with over 300 members (teamwork) *Sep 2001-Jun 2002*

RELEVANT COURSEWORK

- Microelectronic Fabrication Technology
- Advanced Electronic Materials Processing
- Principles of MEMS Transducers
- Design of MEMS Transducers
- Organic Electronics
- Electron Theory of Solids I
- Scanning Electron Microscopy
- XRD Training
- Material Structures and Defects
- Materials Thermodynamics
- Introduction to Nanodevice
- Semiconductor Device Theory I
- Future Microelectronic Technology
- Applied Magnetism & Magnetic Materials
- Electromagnetic Field Theory and Applications I
- Foundations of Digital Signal Processing