

Chia-Hao Lee

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EDUCATION

M.S. in Materials Science and Engineering, National Taiwan University (NTU) Taipei, Taiwan

- GPA: 4.01 / 4.30 Sept. 2014 – June 2016
- Dissertation: The Growth of Graphene on Nickel Silicide Substrates
- Advisor: Prof. Cheng-Yen Wen

B.S.Eng. in Materials Science and Engineering, National Taiwan University (NTU) Taipei, Taiwan

- GPA: 3.74 / 4.30 (overall), 3.81 / 4.30 (Major) Sept. 2010 – June 2014

RESEARCH EXPERIENCES

http://www.mse.ntu.edu.tw/~cwen/Chia-Hao_Lee.html

High-Quality Graphene Growth on Nickel Silicide Substrates by UHVCVD Jul. 2015 – Aug. 2016

Advisor: Prof. Cheng-Yen Wen

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

- Designed and built a multifunctional Ultra-High Vacuum Chemical Vapor Deposition system
- Synthesized graphene on atomic-flat, high-quality nickel silicide substrates (Ni_2Si , NiSi , NiSi_2)
- Analyzed the morphology and quality of graphene by TEM, SEM, Auger and Raman spectroscopy

Large-Domain Graphene Growth on Cu by Oxygen-Assisted CVD Jul. 2014 – Jul. 2015

Advisor: Prof. Cheng-Yen Wen

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

- Reduced the nucleation density of graphene grown on Cu by 1000 times with oxide passivating layer
- Increased the carrier mobility of graphene-based transistors by a factor of 6 by oxygen-assisted CVD

TEM Assistant Operator Jul. 2014 – Jul. 2016

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

- Assisted dozens of users to obtain high quality TEM images, diffraction patterns or EDS data
- Trained more than 10 TEM beginners

PUBLICATION AND PRESENTATIONS

Journal Article:

R. J. Chang, **C. H. Lee**, M. K. Lee *et al.*, "Effects of Surface Oxidation of Cu substrates on the Growth Kinetics of Graphene by Chemical Vapor Deposition", *Nanoscale*, 2017, DOI: [10.1039/C6NR09341H](https://doi.org/10.1039/C6NR09341H)

Oral Presentation:

R. J. Chang, **C. H. Lee**, Z. C. Luo *et al.*, "Controlling the Nucleation Density of Graphene on Copper Substrates in Chemical Vapor Deposition Growth" *9th International Conference on New Diamond and NanoCarbons, Shizuoka, Japan, 2015.*

Poster Presentation:

C. H. Lee and C. Y. Wen, "CVD Growth of Graphene on Various Nickel Silicide Substrates" *Annual Conference of Microscopy Society of Taiwan, Taiwan, 2016.*

AWARDS

First Prize, Workshop on Undergraduate Research Project June 2014

Student poster competition of Department of Materials Science and Engineering, NTU

Silver Prize, Student Poster Competition of the course "Ethics for Engineers Professionals" Jan. 2014

Department of Engineering Science and Ocean Engineering, NTU

RESEARCH SKILLS

Materials Process

- Ultra-High Vacuum Chemical Vapor Deposition (UHVCVD) System
- Magnetron Sputter System, Thermal Evaporator
- Chemical Vapor Deposition Methods for 2D Materials

Characterization Techniques

- Transmission Electron Microscopy (TEM), Sample Preparation
- Scanning Electron Microscopy (SEM)
- Auger Electron Spectroscopy (AES)
- X-Ray Diffractometer (XRD)
- Raman Spectroscopy

Computational Method

- First-Principle Calculations by CASTEP (Cambridge Sequential Total Energy Package)

OUTSTANDING COURSEWORK (A+)

Theoretical Materials Physics, First-Principle Computation Materials Science, Physics of Semiconductor Devices, Transportation Phenomena, Electron Microscopy, Electronic Package Processing, Semiconductor Optics, Nano Optoelectronics Semiconductor Processing, Powder Metallurgy

WORK EXPERIENCES

Firefighters draftee, Tainan City Government Fire Bureau, Tainan, Taiwan Aug. 2016 – present
Serving as emergency medical technician, and Operating fire truck at the scene of fire

Lecturer of Innovation Open House, Taipei, Taiwan Feb. 2016
Shared the experience of studying in Materials Science and Engineering with high school students

Conference worker, The 6th International Conference of RPGR, Taipei, Taiwan Sept. 2014
Assisted the registration and seminar sessions of “Recent Progress in Graphene Research”

Editor of the NTUMSE brochures, NTU, Taiwan Sept. 2013 – Jan. 2014
Materials collecting, Typesetting, and Proofreading by Adobe InDesign and PhotoShop

SELECTED EXTRACURRICULAR ACTIVITIES

Team Leader of The NTUMSE Volleyball Team June 2012 – June 2013
Designed and performed the weekly training program, Motivated the team members

Instructor of The Guitar Club of Taipei Municipal Jianguo Senior High School Apr. 2009 – Aug. 2016
Taught advanced guitar playing skills, Shared experiences of holding activities