Renjie CHEN

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EDUCATION

2013 – Current **Ph.D.** student**,** ECE Department**, University of California, San Diego**
Advisor: Prof. Shadi A. Dayeh GPA: 3.9/4 Candidacy: Sep 2015

2010 – 2013 **Master by Research,** Applied Physics, **Nanyang Technological University** (Singapore)

2006 – 2010 **Bachelor,** Material Physics, **Wuhan University** (China)

CURRENT PROJECTS

1. CINT User Proposal on **In-situ Studies of Metal/III-V Solid-State Reactions and Abrupt Interface Devices**
   - CINT Hosts: Dr. John Nogan, Dr. Katie Jungjohann and Dr. Jinkyoung Yoo.
   - Project Objective: To study and control the kinetics and structural dynamics of solid-state reaction between metal contact (Ni) and high mobility channel material (InGaAs), *in-situ* Transmission Electron Microscopy (TEM).
   - Project Skills: Extensive experience in JEOL 6300 **e-beam writer**, FEI Tecnai F30 **TEM**, FEI Nova600 **FIB** system and DI Veeco **AFM**

2. Ph.D. Degree Project on **High-Density Capacitive Pillar Arrays for High Fidelity Neural Sensors**
   - Project Objective: To develop high-density intra-cellular Si nanowire neural sensor arrays on transparent substrates using novel integration schemes.
   - Project Skills: Extensive experience and proficiency in various micro-fabrication methods: **Photolithography**, **E-beam Deposition**, **RTA**, **Dry/Wet Etch**, **ALD**, **Plasma Asher**, **PECVD**, etc.

3. Project on **All Solid-State Wafer Bonding of III-V Materials on Si CMOS with Self-aligned Source/Drain Contact**
   - Project Objective: To develop a novel wafer bonding method through metal-semiconductor solid-state reaction, and to apply this bonding method for CMOS compatible device fabrication with self-aligned S/D
   - Project Skills: Possess good knowledge in **CMOS device fabrication**, **electronic measurements** and **data analysis**

ACADAMIC EXPERIENCE

1. Conference

Jan. 2015 **43rd Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-43)**
Oral Presentation: *Ex-situ and In-situ TEM Studies of Nickelide reaction in InGaAs Fins*

Sep. 2015 **2015 MRS Spring Meeting – Materials Research Society**
Poster: *Advanced Nanoscale Fabrication for Versatile in-situ TEM Studies of Metal-semiconductor Reactions and Interfaces*

Jun. 2015 **57th Electronic Materials Conferences (EMC 2015)**
Oral Presentation: *Size and Orientation Effects on the Kinetics and Structure of Nickelide (Ni-InGaAs) Contact to InGaAs Fin Channels*
Oral Presentation: *High Density Intra-cellular 3D Neuronal Nano-Probes*

Apr. 2015 **2015 MRS Spring Meeting – Materials Research Society**
Oral Presentation: *Kinetics and Structure of Nickelide Contact Formation to InGaAs Fin Channels*

Sep. 2014 **2014 CINT User Meeting,** Los Alamos National Laboratory and Sandia National Laboratories
Poster: *Nickelide Contact Formation to InGaAs FinFETs*

Jun. 2014 **56th Electronic Materials Conferences (EMC 2014)**
Oral Presentation: *Structure, Kinetics and Dynamics of Nickelide Contact Formation to InGaAs Fin structures*

Feb. 2014 **2014 ECE Recruitment Meeting,** University of California, San Diego
Poster: *Novel Neural Probe Technologies: Toward High Density, Fidelity, and Flexibility*

2. Teaching Experience

Jan. – Dec. 2012 **Teaching Assistant** on ***College Physics***, Nanyang Technological University
Including tutorial Lectures and examination assessment

3. Reviewed Articles

Apr. 2015 ***Nanoscale Research Letters***, manuscript number: 1252739081160742 (Research Article)
Aug. 2014 ***Journal of Nanomaterials***, manuscript number: 340384 (Research Article)

HONORS & AWARDS

2013 – 2014 **Departmental Fellowship**, University of California, San Diego

2010 – 2013 **NTU Research Scholarship**, Nanyang Technological University

2010 – 2012 **Project Manager** in Graduate Student Committee, Nanyang Technological University

2010 **Outstanding Graduate Award**, Wuhan University

2007 – 2009 **China National Scholarship** for twice (*the highest scholarship in China*)

2008 **Social Activist Award**, Wuhan University

2007 **Outstanding Student Leader Award**, Wuhan University

PUBLICATIONS

1. S. A. Dayeh, **R. Chen**, Y. G. Ro, and J. Sim, "Issues for the Doping of Semiconductor Nanowires During Growth (Invited)", *Materials Science in Semiconductor Processing*, **2016**, in review
2. S. A. Dayeh, **R. Chen**, R. Liu, A. T. E. Youssef, S. H. Lee, S. Hinckley, M. L. Khraiche, J. Scott, Y. Hwang, A. Tanaka, Y. G. Ro, A. K. Matsushita, X. Dai, C. Soci, S. Biesmans, A. James, J. Nogan, K. L. Jungjohann, D. V. Pete, Y. Zou, and A. Bang, "High Density Individually Addressable Nanowire Arrays Record Intracellular Neuronal Potentials", **2016**, in submitted
3. Y. Shen, **R. Chen**, X. Yu, Q. Wang, K. L. Jungjohann, S. A. Dayeh, and T. Wu, "Gibbs–Thomson Effect in Planar Nanowires: Orientation and Doping Modulated Growth", *Nano Letters* **2016** *16* (7), 4158-4165
4. A. Tanaka, **R. Chen**, K. L. Jungjohann, and S. A. Dayeh, "Strong Geometrical Effects in Submillimeter Selective Area Growth and Light Extraction of GaN Light Emitting Diodes on Sapphire", *Scientific Reports* **2015**, *5*, 17314
5. **R. Chen**, S. A. Dayeh, "Size and Orientation Effects on the Kinetics and Structure of Nickelide Contacts to InGaAs Fin Structures", *Nano Letters* **2015**, *15* (6), 3770–3779
6. W. Tang; B. M. Nguyen; **R. Chen**; and S. A. Dayeh, "Solid-state Reactions of Nickel Silicide, Germanide, and Alloyed Contacts to Semiconductor Nano-Channels (Invited)", *Semiconductor Science and Technology* **2014**, *29*, 054004

7. S. A. Dayeh, W.Tang; B. M. Nguyen, X. Dai, Y. Liu, Y. Hwang, X. Liu, and **R. Chen**," Nanoscale Heterogeneous Reactions and Interfaces in Ge/Si and for III-V on Si Integrated Devices (Invited)", *ECS Transactions* **2013**, *58*(7), 115-125
8. J. Zhang, D. Li, **R. Chen**, and Q. Xiong, "Laser cooling of a semiconductor by 40 Kelvin", *Nature* **2013,** 493, 504-508
9. J. Zhang, D. Li, **R. Chen**, and Q. Xiong, "Laser cooling of a semiconductor by 40 kelvin: an optical refrigerator based on cadmium sulfide nano-ribbons", *Proc. SPIE 8638* **2013,** Laser Refrigeration of Solids VI, 863808
10. **R. Chen**, D. Li, H. Hu, Y. Zhao, Y. Wang, N. Wong, S. Wang, Y. Zhang, J. Hu, Z. Shen, and Q. Xiong, "Tailoring Optical Properties of Silicon Nanowires by Au Nanostructure Decorations: Enhanced Raman Scattering and Photodetection", *The Journal of Physical Chemistry C* **2012**, *116* (7), 4416-4422
11. Y. Lin, Y. Chen, **R. Chen**, K. Ghosh, Q. Xiong, and Yu Huang, "Crystallinity Control of Ferromagnetic Contacts in Stressed Nanowire Templates and the Magnetic Domain Anisotropy", *Nano Letters* **2012,** *12 (8),* 4341–4348
12. Z. Peng, H. Hu, M. I. B. Utama, L. M. Wong, K. Ghosh, **R. Chen**, S. Wang, Z. Shen, and Q. Xiong, "Heteroepitaxial Decoration of Ag Nanoparticles on Si Nanowires: A Case Study on Raman Scattering and Mapping", *Nano Letters* **2010**, *10* (10), 3940-3947

PATENTS

1. Solid-State Wafer Bonding of Functional Materials on Substrates And Self-Aligned Contacts (Patent Provisional OC9182-EFS)
2. High-density Intracellular 3D Neural Probes Array with Individual Addressability (Patent Disclosure, in submission)
3. Biocompatible Preparation Method for Platinum Nanoparticles (China Patent 200910273255.4, issued Jun **2010**)
4. Easy Approach to Prepare Platinum Nanoparticles (China Patent 200910273256.9, issued Nov **2010**)