

Curriculum Vitae

Kyungnam Kang

Education

Ph.D. in Electrical Engineering: Louisiana State University (Minor: Mechanical Engineering)

Dissertation: *Low temperature carbon material deposition with photo-Enhanced chemical vapor deposition*

Advisor: Dr. Pratul K. Ajmera

M.S. in Electrical Engineering: Electronics, Louisiana State University

M.E. in Biomedical Engineering, Texas A&M University (College Station)

Research: *Preliminary study of blood glucose level prediction with adaptive-network-based fuzzy inference system*

Advisor: Dr. Hsini-I Wu

B.S. in Physics, Chung-Ang University (Seoul)

Professional positions

Research Scientist & micro-device lab (MDL) manager: Stevens Institute of Technology at Hoboken (present)

Postdoctoral Associate: Stevens Institute of Technology at Hoboken,

Postdoctoral Associate: Louisiana State University at Baton Rouge,

Research experiences

Stevens Institute of Technology

- **Synthesis of 2-dimensional (2D) materials**
WS₂, MoS₂, WSe₂, MoSe₂ monolayers. Expitaxially grown 2D heterobilayers, location specific growth, and patterned growth have been achieved.
- **Manipulations of TMDs**
WMoS₂, WSe, MoS₂, Fe doped MoS₂ and WS₂, control of TMDs stacking angle.
- **Characterizations of TMDs**
Raman, PL spectroscopy, X-ray photoelectron spectroscopy (XPS), atomic force microscopy (AFM), scanning electron microscopy (SEM), scanning transmission electron microscopy (STEM), closed-cycle He-cryo system for low temperature spectroscopy, etc.
- **Applications**
Spin-transfer torque magnetoresistive random-access memory (STT MRAM), circularly polarized light detector, and quantum emitter are under developing.
- **Miscellaneous technique**
Custom-made thermal CVD system (AP and LP CVD), Micro-electromechanical systems (MEMS) technique including lithography, thin metal deposition, dry etching, wet etching, oxidation and Electrical measurements.

Louisiana State University

- **Synthesis of carbon nanomaterials**
carbon nanotubes, graphene and hexagonal diamond at low temperature with photo-enhanced chemical vapor deposition (PECVD)
- **Characterizations of hexagonal diamond**
Raman spectroscopy, X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), atomic force microscopy (AFM), scanning electron microscopy (SEM), transmission electron microscopy (TEM), Fourier-transform infrared spectroscopy (FTIR), nanoindentation, UV-Visible spectroscopy, and I-V measurement.
- **Miscellaneous technique**
Micro-electromechanical systems (MEMS) technique including lithography, thin film deposition, dry etching, wet etching, X-ray mask fabrication, and oxidation process.

Patents

1. **Kyungnam Kang** and Eui-Hyeok Yang, "*Direct and pre-patterned synthesis of two-dimensional heterostructures*"
US 9,640,391 B2

2. **Kyungnam Kang**, Eui-Hyeok Yang, Xiaotian Wang and Siwei Chen, "Location-specific growth and transfer of single crystalline TMD monolayer arrays" US 10,889,914 B2
3. **Kyungnam Kang**, Eui-Hyeok Yang, and Shichen Fu "In situ doping of irons into MoS₂ toward two-dimensional dilute magnetic semiconductors" Application No. PCT/US2021/036034

Book chapters

1. **Kyungnam Kang**, Siwei Chen, and Eui-Hyeok Yang "Synthesis of transition metal dichalcogenides (TMDs)" in Synthesis, Modelling and Characterization of 2D Materials and Their Heterostructures, *Elsevier*, ISBN: 9780128184752, 2020.
2. Eui-Hyeok Yang, Siwei Chen, **Kyungnam Kang**, Shichen Fu "Synthesis of transition metal dichalcogenides" in "Progress in nanoscale and low-dimensional materials and devices", Topics in Applied Physics, Vol. 144, *Springer Nature* 978-3-030-93459-0, 2022

Publications (peer reviewed articles)

24. Onejae Sul, Hojun Seo, Eunsuk Choi, Sunjin Kim, Jinsil Gong, Jiyoung Bang, Hyoungeen Ju, Sehoon Oh, Gunwoo Lee, Yeonsu Lee, Yong-Duck Kim, Jun-Hyeok Kim, **Kyungnam Kang**, Byoung-Deok Choi, Jinki Hong, Eui-Hyeok Yang, Yunchul Chung, Seung-Beck Lee "An ultralow power mixed dimensional heterojunction transistor based on the charge plasma pn junction" *Small*, 18, 2202153 (IF: 13.08)
23. Mohammed Adel Aly, Manan Shah, Lorenz Maximilian Schneider, **Kyungnam Kang**, Martin Koch, Eui-Hyeok Yang, Arash Rahimi-Iman, "Radiative Pattern of Intralayer and Interlayer Excitons in Two-Dimensional WS₂/WSe₂ Heterostructure" *Scientific Reports*, 12, 6939 (2022)
22. Xiang Hua, Theodor Axenie, Mateo Navarro Goldaraz, **Kyungnam Kang**, Eui-Hyeok Yang, Kenji Watanabe, Takashi Taniguchi, James Hone, Bumho Kim, Irving P. Herman "Improving the optical quality of MoSe₂ and WS₂ monolayer with complete h-BN encapsulation by high temperature annealing" *ACS Applied Materials & Interfaces*, 14, 2255-2262 (2022)
21. Xiang Hua, Datong Zhang, Bumho Kim, Dongjae Seo, **Kyungnam Kang**, Eui-Hyeok Yang, Jiayang Hu, Xianda Chen, Haoran Liang, Kenji Watanabe, Takashi Taniguchi, James Hone, Young Duck Kim, Irving Herman "Stabilization of CVD-grown WS₂ monolayers at elevated temperature with hBN encapsulation" *ACS Applied Materials & Interfaces*, 12, 31271-31278 (2021) (IF: 8.758)
20. **Kyungnam Kang**, Shichen Fu, Kamran Shayan, Anthony Yoshimura, Siamak Dadras, Yuzan Xiong, Kazunori Fujisawa, Stefan Strauf, Mauricio Terrones, Wei Zhang, Vincent Meunier, A.Nick Vamivakas, Eui-Hyeok Yang "The effects of Fe-doping on magnetism in MoS₂ and WS₂ monolayers" *Nanotechnology*, 32, 095708 (2020) (IF: 3.551)
19. Shichen Fu*, **Kyungnam Kang***, Kamran Shayan*, Anthony Yoshimura, Siamak Dadras, Xiaotian Wang, Lihua Zhang, Siwei Chen, Na Liu, Apoorv Jindal, Xiangzhi Li, Abhay N. Pasupathy, A. Nick Vamivakas, Vincent Meunier, Stefan Strauf, Eui-Hyeok Yang "Enabling room temperature ferromagnetism in monolayer MoS₂ via in situ iron-doping" (* equal contribution) *Nature Communications*, 11, 2034 (2020) (IF: 14.919)
18. Kamalika Ghatak, **Kyungnam Kang**, Eui-Hyeok Yang and Dibakar Datta "Controlled edge dependent stacking of WS₂-WS₂ Homo- and WS₂-WSe₂ Hetero-structures: A Computational Study" *Scientific Reports*, 10, 1648 (2020)
17. Lorenz M. Schneider, Jan Kuhnert, Simon Schmitt, Ulrich Huttner, Tineke Strouken, Stefan W. Koch, Wolfram Heimbrod, **Kyungnam Kang**, Eui-Hyeok Yang and Arash Rahimi-Iman "Spin-Layer- and Spin-Valley-Locking in CVD-Grown AA' and AB Stacked Tungsten Disulfide Bilayers" *Journal of Physical Chemistry C*, 123, 21813-21821 (2019) (IF:4.189)
16. Xiaotian Wang, **Kyungnam Kang**, Kyle Godin, Shichen Fu, Siwei Chen and Eui-Hyeok Yang, "Effects of solvents and polymer on photoluminescence of transferred WS₂ monolayers" *Journal of Vacuum Science and Technology B*, 37, 052902 (2019)
15. Abdollah M. Dadgar, Declan Scullion, **Kyungnam Kang**, Daniel Esposito, Eui-Hyeok Yang, Irving P. Herman, Marcos A. Pimenta, Elton-J. G. Santos and Abhay N. Pasupathy, "Strain engineering and Raman spectroscopy of monolayer transition metal dichalcogenides" *Chemistry of Materials*, 30, 5148-5155, (2018) (IF: 10.159)
14. L. M. Schneider, S. Lippert, J. Kuhnert, D. Renaud, **K. N. Kang**, O. Ajayi, M. U. Halbich, O. M. Abdulmunem, X. Lin, K. Hassoon, S. Edalati-Boostan, Y. D. Kim, W. Heimbrod, E. H. Yang, J. C. Hone and A. Rahimi-Iman, "Them

- impact of the substrate material on the optical properties of 2D WSe₂ monolayers" *Semiconductors*, 52, 565-571, (2018) (IF: 0.692)
13. E.H. Yang, **K. Kang**, D. Datta, J. Ding, and G. Hader "A special issue on modeling and nanofabrication of 1D and 2D materials" *Nano-Structures & Nano-Objects*, 15, 61-61 (2018) (IF: 4.515)
 12. Xiaotian Wang, **Kyungnam Kang**, Ruozhou Du and Eui-Hyeok Yang, "Location-specific growth and transfer of arrayed MoS₂ monolayers with controlled size and location" *2D materials*, 4, 025093, (2017)
 11. **Kyungnam Kang**, Kyle Godin, Shichen Fu, YoungDuck Kim, James Hone and Eui-Hyeok Yang, "Graphene-assisted anti-oxidation of tungsten disulfide monolayers: Substrate and electric-field effect", *Advanced Materials*, 29, 1603898, (2017), **Back Cover page** (IF: 21.950)
 10. Sina Lippert, Lorenz Maximilian Schneider, Dylan Renaud, **Kyungnam Kang**, Obafunso Ajayi, Marc-Uwe Halbich, Oday M. Abdulmunem, Xing Lin, Jan Kuhnert, Khaleel Hassoon, Saeideh Edalati-Boostan, Young Duck Kim, Wolfram Heimbrod, Eui-Hyeok Yang, James C. Hone, and Arash Rahimi-Iman, "Influence of the substrate material on the optical properties of tungsten diselenide monolayers", *2D materials*, 4, 025045, (2017) (IF: 6.516)
 9. Kyle Godin*, **Kyungnam Kang***, Shichen Fu and Eui-Hyeok Yang, "Increased monolayer domain size and patterned growth of WS₂ through controlling surface energy of substrates", *Journal of Physics D*, 49, 325304 (2016) (* equal contribution) (IF: 2.588)
 8. **Kyungnam Kang**, Kyle Godin and Eui-Hyeok Yang, "The growth scale and kinetics of WS₂ monolayers under varying H₂ concentration" *Scientific Reports*, 5, 13205 (2015) (IF: 5.228)
 7. **Kyungnam Kang**, Jeonghwan Kim, Yoonyoung Jin and Pratul K. Ajmera, "Characterization of low temperature synthesized hexagonal diamond thin films" *Microsystem Technologies*, 21, 1394-1400 (2015)
 6. **Kyungnam Kang** and Pratul K. Ajmera, "Low temperature carbon nanotube and hexagonal diamond deposition with photo-enhanced chemical vapor deposition" *Microsystem Technologies*, 21, 1225-1231 (2015)
 5. Jeonghwan Kim, **Kyungnam Kang**, Yoonyoung Jin, Jost Goettert, and Pratul K. Ajmera, "Hydrodynamic Focusing Micropump Module with PDMS/Nickel-particle Composite Diaphragms for Microfluidic Systems" *Microsystem Technologies*, 21, 65-73 (2015)
 4. J. Kim, **K. Kang**, A. Sarkar, P. Malempati, D. Hah, T. Daniels-Race and M. Feldman "Nano-Rough Gold for Enhanced Raman Scattering" *Journal of Vacuum Science & Technology B*, Vol. 31, 06FE02-4 (2013) (IF: 1.32)
 3. **Kyungnam Kang**, Pratul K. Ajmera, YoonYoung Jin and Jeonghwan Kim, "Study on low temperature growth and formation mechanism of hexagonal diamond" *Diamond and related materials*, Vol. 27-28, 76-81 (2012) (IF: 1.913)
 2. In-Hyook Song, **Kyungnam Kang**, Yoonyoung Jin, Daniel S. W. Park and Pratul K. Ajmera, "Microlens array fabrication by backside exposure using Fraunhofer diffraction" *Microsystem Technologies*, Vol. 14, 1285-1290 (2008)
 1. **Kyungnam Kang**, YoonYoung Jin, Jost Goettert, and Pratul K. Ajmera, "Shape Controllable Micro-nozzle Fabrication" *Microsystem Technologies*, Vol. 14, 1641-1646 (2008) (IF: 1.195)

Conferences and proceedings

42. Siwei Chen, Zitao Tang, Mengqi Fang, **Kyungnam Kang**, Abdus Salam Sarkar, and Eui-Hyeok Yang "Growth and fabrication Fe:MoS₂-hBN-Fe of magnetic tunneling junction" MRS, (2022)
41. Siwei Chen, Mengqi Fang, **Kyungnam Kang**, Shichen Fu, and Eui-Hyeok Yang "Substitutional Fe doping into MoS₂, WS₂, and WSe₂ monolayers for ferromagnetism" ACS spring, (2022)
40. Siwei Chen, Zitao Tang, Mengqi Fang, **Kyungnam Kang**, and Eui-Hyeok Yang "Growth and transfer of 2D heterostructures with Fe:MoS₂ toward magnetic tunneling junctions" ACS Spring (2022)
39. Siwei Chen, Shichen Fu, **Kyungnam Kang**, Zitao Tang, Mengqi Fang, and Eui-Hyeok Yang "Magnetic tunneling junction based on Fe- doped MoS₂ van der Waals Heterostructures toward magnetic tunneling junction" Virtual MRS Spring, (2021)
38. Siwei Chen, Zitao Tang, Mengqi Fang, Shichen Fu, **Kyungnam Kang**, and Eui-Hyeok Yang "2D heterostructures with Fe:MoS₂ toward magnetic tunneling junction" IEEE 21st International Conference on Nanotechnology, (2021)
37. Siwei Chen, **Kyungnam Kang**, Shichen Fu, and Eui-Hyeok Yang "Substitutional doping of Fe on magnetism in MoS₂ and WS₂ monolayers" Virtual MRS Spring, (2021)
36. Shichen Fe, **Kyungnam Kang**, Kamran Shayan, Anthony Yoshimura, Siwei Chen, Siamak Dadras, Lihua Zhang, Na Liu, A. Nick Vamivakas, Vincent Meunier, Stefan Strauf, and Eui-Hyeok Yang "Synthesis of iron-doped monolayer MoS₂ enabling room temperature ferromagnetism", MRS Fall Meeting, (2020)

35. Shichen Fu, Kamran Shayan, **Kyungnam Kang**, Anthony Yoshimura, Siamak Dadras, Xiaotian Wang, Lihua Zhang, Xiangzhi Li, Siwei Chen, A. Nick Vamivakas, Vincent Meunier, Stefan Strauf, and Eui-Hyeok Yang “*In situ* iron doping of MoS₂ monolayer for room temperature ferromagnetism”, 2020 American Chemical Society (ACS) National Meeting & Expo, (2020)
34. Shichen Fu, **Kyungnam Kang**, Xiaotian Wang, Lihua Zhang, Xiao Tong, Siwei Chen and Eui-Hyeok Yang “Chemical Vapor Deposition Growth and Characterization of Iron-doped MoS₂ Monolayers” IMECE, (2019) (**NSF poster competition award**)
33. Shichen Fu, Kamran Shayan, **Kyungnam Kang**, Xiaotian Wang, Lihua Zhang, Xiangzhi Li, Xiao Tong, Siwei Chen, Stefan Strauf, Eui-Hyeok Yang “Magnetic Iron Defect Centers in Molybdenum Disulfide Monolayers” MRS Fall Meeting, (2019)
32. Lorenz M. Schneider, Jan Kuhnert, Simon Schmitt, Ulrich Huttner, Tineke Strouken, Stephan W. Koch, Wolfram Heimbrod, Shichen Fu, Xiaotian Wang, **Kyung Nam Kang**, Eui-Hyeok Yang, and Arash Rahimi-Iman “Optical Valleytronic Properties of CVD-grown Tungsten Disulfide AA' and AB Bilayers” Deutsche Physikalische Gesellschaft (DPG) Frühjahrstagung spring meeting, (2019)
31. Xiaotian Wang, **Kyungnam Kang**, Shichen Fu, Kyle Godin, Siwei Chen, and Eui-Hyeok Yang, “Effects of Wet Transfer on Photoluminescence of WS₂” American Physical Society, (2019)
30. Shichen Fu, **Kyungnam Kang**, Xiaotian Wang, Siwei Chen and Eui-Hyeok Yang, “Low-Pressure Chemical Vapor Deposition Growth of Iron-Doped MoS₂ Monolayers” American Physical Society, (2019)
29. **Kyungnam Kang**, Shichen Fu, Xiaotian Wang, Siwei Chen, Kyle Godin and Eui-Hyeok Yang, “Air stability of WS₂ monolayers and controlled stacking angles of WS₂ bilayers” Gordon Research Conference, (2018)
28. Lorenz Maximilian Schneider, Jan Kuhnert, Wolfgang Heimbrod, **Kyung Nam Kang**, Young Duck Kim, Eui-Hyeok Yang, James C. Hone, and Arash Rahimi-Iman, “The influence of the environment on optical properties of 2D semiconductors” Functional Nano-Materials Science Symposium, (2018)
27. E. H. Yang, **K. Kang**, K. Godin, X. Wang, J. Xu, S. Fu, R. Zhang, A. Palumbo, S. Chen, G. Hader, C. Cupo, K. Yang and M. Wang, “1D/2D materials, flexible substrates and surfaces” AiMES, (2018)
26. E. H. Yang, **K. Kang**, K. Godin, X. Wang, S. Fu and S. Chen, “Controlled growth of 2D heterostructures and prevention of TMD oxidation”, SPIE DDS, (2018) (**Invited conference paper**)
25. Lorenz Maximilian Schneider, Sina Lippert, Jan Kuhnert, Dylan Renaud, Wolfram Heimbrod, Obafunso Ajayi, Young Duck Kim, James C. Hone, **Kyungnam Kang**, Eui-Hyeok Yang, and Arash Rahimi Iman, “Density-dependent excitonic properties and dynamics in 2D heterostructures consisting of boron nitride and monolayer or few-layer tungsten diselenide” SPIE DSS, (2018) (**Conference paper**)
24. **Kyungnam Kang**, Kamalika Ghatak, Shichen Fu, Xiaotian Wang, Siwei Chen, Dibakar Datta and Eui-Hyeok Yang, “A study on the growth of WS₂ homobilayers with controlled 0 and 60 degree stacking using two-step van der Waals epitaxy” Grapheneforum, (2018)
23. **Kyungnam Kang**, Kamalika Ghatak, Shichen Fu, Xiaotian Wang, Siwei Chen, Dibakar Datta and Eui-Hyeok Yang, “A study on the growth of WS₂ homobilayers with controlled AA and AB stacking using two-step van der Waals epitaxy” MRS Fall Meeting, (2017)
22. **Kyungnam Kang**, Xiaotian Wang, Shichen Fu, Siwei Chen and Eui-Hyeok Yang, “Effects of electric field on TMD oxidation” MRS Fall Meeting, (2017)
21. Siwei Chen, **Kyungnam Kang**, Xiaotian Wang, Shichen Fu and Eui-Hyeok Yang, “Two-step contact growth of vertical WSe₂/MoSe₂ heterostructures” MRS Fall Meeting, (2017)
20. Shichen Fu, **Kyungnam Kang**, Xiaotian Wang Anthony Palumbo, Eui-Hyeok Yang, “One-step synthesis of WS₂/MoS₂ heterostructures via microfabrication with differing layers of transition metal oxides” MRS Fall Meeting, (2017)
19. Xiaotian Wang, **Kyungnam Kang**, Greg Hader, and Eui-Hyeok Yang, “Location-specific growth and aligned transfer of arrayed single crystalline MoS₂ and WS₂ monolayers” MRS Fall Meeting, (2017)
18. S. H. Kim, E. Barre, O. B. Aslan, T. Heinz, Y. D. Kim, D. Seo, J. Hone, **K. Kang** and E. H. Yang, “Charge and spin-valley transfer in transition metal dichalcogenides heterostructure” Bulletin of the APS 62, (2017)
17. Dadgar, A. Pasupathy, E. Santos, M. Pimenta, E. H. Yang, **K. Kang**, D. Scullion, P. Rice, I. Herman, “Evolution of phonon and electronic structures of transition metal dichalcogenides as a function of large uniaxial strain” Bulletin of the APS 62, (2017)
16. S. Lippert, L. M. Schneider, D. Renaud, **K. N. Kang**, O. Ajayi, J. Kuhnert, M. U. Halbich, O. M. Abdulmunem, X. Lin, K. Hassoon, S. Edalati-Boostan, Y. D. Kim, W. Heimbrod, E. H. Yang, J. C. Hone and A. Rahimi-Iman, “Influence of the substrate material on the optical properties of tungsten diselenide monolayers” 25th Int. Symp. “Nanostructures: Physics and Technology”, (2017)
15. A. Palumbo, K. Godin, **K. Kang** and E. H. Yang, “Effects of Organic Solvent and Etching Pretreatments on Chemical Vapor Deposition of TMD Monolayers,” MRS Fall Meeting, (2016)
14. R. Du, **K. Kang**, K. Godin, S. Chen and E. H. Yang, “Epitaxial growth of TMD monolayers on graphene and hBN substrates,” MRS Fall Meeting, (2016)
13. S. Chen, R. Du, **K. Kang**, X. Wang and E. H. Yang, “Epitaxial Growth of Disparate Vertical Heterostructures,” MRS Fall Meeting, (2016)
12. X. Wang, S. Chen, R. Du, **K. Kang**, K. Godin and E. H. Yang, “Localized Growth and Target Transfer of Single Crystalline Transition Metal Dichalcogenide Monolayers,” MRS Fall Meeting, (2016)

11. G. Arefe, N. Finney, D. Seo, Y. D. Kim, D. Chang, X. Cui, **K. Kang**, S.-K. Jeong, S. H. Chun, E. H. Yang, J. Hone, "WSe₂ Heterostructures with p-type Multi-layer Graphene Contacts," American Physical Society, (2016)
10. Ali Dadgar, Abhay Pasupathy, Irving Herman, Dennis Wang, **Kyungnam Kang** and Eui-Hyeok Yang "Strain Engineering of Transition Metal Dichalcogenides" American Physical Society, (2016)
9. **Kyungnam Kang** and Eui-Hyeok Yang, "The effect of H₂ concentration for large area WS₂ deposition" TechConnect World Innovation Conference, (2015)
8. **Kyungnam Kang** and E-H Yang, "Growth of WS₂ monolayers: nanoislands to microislands" International Mechanical Engineering Congress & Exposition, (2014)
7. J. Kim, **K. Kang**, P.R. Malempati, A. Sarkar, D. Hah, T. Daniels-Race, and M. Feldman, "Nano-Rough Gold for Enhanced Raman Scattering" Electron, Ion, and Photon Beam Technology and Nanofabrication (EIPBN), (2013)
6. Jeonghwan Kim, **Kyungnam Kang**, Yoonyoung Jin, Jost Goettert, and Pratul K. Ajmera, "Hydrodynamic Focusing Micropump Module with PDMS/Nickel-particle Composite Diaphragms for Microfluidic Systems" HARMST, (2013)
5. Fareed Dawan, Yoonyoung Jin, **Kyungnam Kang** and Eyassu Woldesenbet, "Surface Deposition and Characterization of 3-D Photoanode for DSSC Applications" 20th Annual International Conference on Composites/Nano Engineering (ICCE, 2012)
4. J. Kim, Y. Jin, **Kyungnam Kang**, J. Goettert and P. K. Ajmera, "Hydrodynamic Focusing Module Driven by PDMS/Ni-Particle Composite Membrane Micropump" HARMST (2011)
3. **Kyungnam Kang**, Yoonyoung Jin, Pratul K. Ajmera and Sunggook Park, "Low temperature deposition of carbon nanotubes" Proceedings of the SPIE, Vol. 7291, 729112-729118, (2009)
2. **Kyungnam Kang**, YoonYoung Jin, Jost Goettert, and Pratul K. Ajmera, "Shape Controllable Micro-nozzle Fabrication" HARMST, (2007)
1. In-Hyok Song, **Kyungnam Kang**, Yoonyoung Jin, Daniel S. W. Park and Pratul K. Ajmera, "Microlens array fabrication by backside exposure using Fraunhofer diffraction" High Aspect Ratio Micro Structure Technology, (HARMST, 2007)

Guide undergraduate and graduate students

Undergraduate students

Austen Thien (Summer 2014): Developing TMD growth recipe.
 Jonathan Rodriguez (Summer 2016): Developing TMD transfer process.
 Raj Mistry (Summer 2016-Spring 2017): TMD transfer and simple characterization.

Graduate students

Shichen Fu (Jan 2014-present): Developed TMD growth recipe, Fe doped MoS₂ and Fe doped WS₂ growth and characterization for room temperature dilute magnetic semiconductor (DMS).
 Siwei Chen (Aug. 2015-present): Developed recipe for MoSe₂ and WSe₂ monolayer growth. spin-transfer torque magnetoresistive random access memory (STT MRAM) using 2D DMS.
 Kyle Godin (Jan. 2015-Aug. 2018): Studied substrate effects on TMD growth and patterned TMD growth. Characterization of WS₂ monolayer.
 Xiaotian Wang (Aug. 2015-Dec. 2019): Location specific TMD growth and transfer for non-linear optics.
 Ruozhou Du (Sep. 2015-Jan. 2017): Developed recipe for MoSe₂ and WSe₂ monolayer growth.
 Pengxi Zhu (Sep. 2017-May. 2019): CNT and graphene growth for flexible and stretchable devices.
 Yangbowen Liu (Jan. 2018-May 2019): CNT and graphene growth for flexible and stretchable devices.

Outreaches

Technical advisor: Startup company (InsurgentMedtech, www.insurgentech.com)

Guest Editor: Nano-Structures & Nano-Objects

Editorial Manager: Microelectronic Engineering

Reviewer: IEEE Sensors Journal

ACS Nano

Scientific Reports

Journal of physics D: Applied physics

Nanoscience and nanotechnology letters

Journal of nanoparticle research

Materials Science in Semiconductor Processing

Coatings

Nanoscale

Optik

Member: Korean Scientist and Engineers Network (KOSEN)

Korean-American Scientists and Engineers Association (KASEA)

Honors and Awards

Stevens Institute of Technology: Innovation and Entrepreneurship (I&E) patent award

Korean-American Scientists and Engineers Association (KSEA): Travel award

Korea Evaluation Institute of Industrial Technology (KEIT): Proposal award

Louisiana State University: Travel award

Chung-Ang University: Merit based scholarship, Physics department