

Po-Hsiang Wang | Santa Clara, CA | (404)426-0708 | Pohwa065@gmail.com |

<https://www.linkedin.com/in/po-hsiang-wang-09b74089/>

EXPERTISE

- **Machine Learning:**
Computational imaging, deep generative models, statistical learning, computer vision, extended dynamic range
- **Materials Science:**
Carbon nanotube nanocomposite, interface chemistry, surface characterization, spectroscopy
- **Simulation:**
Ansys Lumerical FDTD, Zemax OpticStudio
- **Programming:**
Python, MATLAB

WORK EXPERIENCE

03/2018-Present **KLA (Milpitas, CA, USA)**

Position: Senior System Design Engineer

May 2022-Present

- Developed an end-to-end machine learning pipeline to denoise dark field microscopic images, handling the entire workflow independently including data preparation for training and inference, model architecture design, feature engineering, custom loss function development, and iterative model training and evaluation.
- Currently working on a computational imaging project focused on co-optimizing optical system design and a U-Net-based denoising model.
- Lead system modeling, error budgeting and characterization to inform architectural decisions.
- Define and validate system specifications through prototyping and cross-functional collaborations.

Position: Application Development Engineer

March 2018-May 2022

- Developed and deployed convolutional neural network (CNN) for wafer defect classification.
- Applied supervised and unsupervised machine learning algorithms (Random Forest, PCA, SVM and k-means clustering) to production data.
- Led internal and external product testing and documentation efforts.

EDUCATION

Since 03/2020

Stanford University, (Palo Alto, CA)

*Stanford Center for Professional Development (SCPD) KLA System Engineering Certificate Program
Visual Computing Graduate Certificate; Data Mining and Application*

09/2013-12/2017

Georgia Institute of Technology, (Atlanta, GA)

Degree: Ph.D. Major: Materials Science and Engineering (GPA: 4.0/4.0)

09/2009-06/2011

Linköping University, Institute of Technology, (Linköping, Sweden)

Degree: M.S. Materials Physics and Nanotechnology (GPA: 4.77/5.0)

09/2006-06/2009

National Tsing Hua University, (Hsinchu, Taiwan)

Degree: B.S. Materials Science and Engineering (GPA: 3.8/4.0; Major GPA: 3.87/4.00)

PROJECTS

Suppress Speckle Noise with Defocus

- U-Net that takes input images at various focus to predict speckle pattern on rough surface or film stacks illuminated by coherent light source.
- The model is found capable of not just improving signal SNR but also capturing and recovering fine features.

Surface Defect Image Classification with Convolutional Neural Network

- Convolutional neural network (CNN) to classify defects on the semiconductor wafer substrate.
- Data augmentation by Generative Adversarial Network (GAN) is applied in some of the classes to improve classification accuracy.

SRGAN for Super Resolution and Image Enhancement

- TensorFlow implementation of SRGAN to reconstruct high resolution (HR) images from low resolution images.
- Applicable to various image enhancement tasks including deblurring, color correction and restore spatial resolution.

RESEARCH EXPERIENCES

Georgia Institute of Technology, Dept. of Materials Science and Engineering, (Atlanta, USA)

Position: *Research Assistant*

08/2013- present

Ph.D. Thesis: *Structure, Processing and Properties of Carbon Nanotube Composites with Polypropylene*

- Working with SABIC corporate research team to process and characterize commercial polypropylene (PP) with carbon nanotubes (CNTs) having different interface chemistries.
- Invented a novel approach to tailored CNT/PP interphase from which a patent has been filed and granted.
- Characterize structure-property relationship of the nanocomposite with engineered polymer interphase using Raman spectroscopy, 2D X-ray diffraction, and SEM.

National Tsing Hua University, Dept. of Materials Science and Engineering, (Hsinchu, Taiwan)

Position: *Research Assistant*

10/2012- 06/2013

- Collaborated with Sensortek, (Hsinchu, Taiwan) to design, fabricate and test magnetic field sensors.
- Assisted in strategic patent mining on system and method for magnetic field sensors.

Linköping University, Dept. of Physics, Chemistry and Biology (IFM), (Linköping, Sweden)

Position: *Research Assistant*

09/2009-06/2011

M.S. Thesis: *Magneto-optical Studies of Optical Spin Injection in InAs Quantum Dot Structures*

- Investigated optical spin injection in InAs/GaAs quantum dots (QDs) structures under cryogenic temperature using continuous-wave optical orientation spectroscopy.

Project course in Physics: *Design and Fabrication of Sensor Chip, CDIO*

- Cooperated with SenSiC AB in a project group to design, fabricate and test NO_x sensor in the research lab.

Advanced Project Work in Applied Physics: *Growth and Characterization of 3C-SiC on 6H- SiC Substrate*

- Mechanism of 3C-SiC sublimation epitaxial growth in vacuum/nitrogen ambience.

PATENT & PATENT APPLICATION

1. **P.-H. Wang**, S. Ghoshal, N. Verghese, S. Kumar, “Polymer Coated Multiwall Carbon Nanotubes”, US10549996B2, published on Feb 4, 2020.

SELECTED PUBLICATIONS

1. **P.-H. Wang**, S. Ghoshal, P.V. Gulgunje, N. Verghese, S. Kumar, “Polypropylene Nanocomposites with Polymer Coated Multiwall Carbon Nanotubes” *Polymer* 100 (2016): 244-258.

2. S. Ghoshal, **P.-H. Wang**, P.V. Gulgunje, N. Verghese, S. Kumar, "High Impact Strength Polypropylene Containing Carbon Nanotubes", *Polymer* 100 (2016): 259-274.
3. **P.-H. Wang**, P.V. Gulgunje, S. Ghoshal, I. Odeh, N. Verghese, S. Kumar, "Effect of Interfacial Chemistry on Crystallization of Polypropylene/Multiwall Carbon Nanotube Nano Composites", *Polymer Engineering & Science*, 59.8 (2019): 1570-1584.
4. **P.-H. Wang**, P.V. Gulgunje, S. Ghoshal, N. Verghese, S. Kumar, "Rheological Behavior of Polypropylene Nanocomposites with Polymer Coated Multiwall Carbon Nanotubes", *Polymer Engineering & Science*, 59.9 (2019): 1763-1777.
5. **P.-H. Wang**, S. Sarkar, P.V. Gulgunje, N. Verghese, S. Kumar, "Structure and Rheological Behavior of Polypropylene Interphase at High Carbon Nanotube Concentration", *Polymer* 150 (2018): 10-25.
6. **P.-H. Wang**, D. Bajaj, S. Sarkar, N. Verghese, S. Kumar, "Fracture Mechanism of High Impact Strength Polypropylene Containing Carbon Nanotubes", *Polymer* 151 (2018): 287-298.
7. Zoughi, R., P. J. Arias-Monje, J. Gallion, S. Sarkar, **P.-H. Wang**, P. Gulgunje, N. Verghese, and S. Kumar. "Microwave dielectric properties and Targeted heating of polypropylene nano-composites containing carbon nanotubes and carbon black." *Polymer* 179 (2019).
8. H. Chang, A.-T. Chien, H. C. Liu, **P.-H. Wang**, B. A. Newcomb, S. Kumar. "Gel Spinning of Polyacrylonitrile/ Cellulose Nanocrystal Composite Fibers", *ACS Biomaterials Science & Engineering* 1.7 (2015): 610-616.
9. H. Chang, J. Luo, A. A. B. Davijani, A.-T. Chien, **P.-H. Wang**, H. C. Liu, S. Kumar, "Individually Dispersed Wood-Based Cellulose Nanocrystals", *ACS Applied Materials & Interfaces* 8.9 (2016): 5768-5771.
10. H. Chang, J. Luo, H. C. Liu, A. A. B. Davijani, **P.-H. Wang**, S. Kumar, "Orientation and Interfacial Stress Transfer of Cellulose Nanocrystal Nanocomposite Fibers", *Polymer* (2017).
11. H. Chang, J. Luo, H. C. Liu, A. A. B. Davijani, **P.-H. Wang**, S. Kumar, "Ductile polyacrylonitrile fibers with high cellulose nanocrystals loading", *Polymer* (2017).
12. H. C. Liu, C.-C. Tuan, A.A. B. Davijani, **P.-H. Wang**, H. Chang, C.-P. Wong, S. Kumar, "Rheological Behavior of Polyacrylonitrile and Polyacrylonitrile/Lignin Blends", *Polymer* 111 (2017): 177-182.
13. H. C. Liu, J. Luo, A.A. B. Davijani, H. Chang, **P.-H. Wang**, S. Kumar, "Polyacrylonitrile-Polyacrylonitrile/Lignin Bi-component Hollow Carbon Fiber", *Carbon* 149, 165-172 (2019).
14. J. Luo, H. Chang, A. A. B. Davijani, H. C. Liu, **P.-H. Wang**, R. J. Moon, S. Kumar, "Influence of High Loading of Cellulose Nanocrystals in Polyacrylonitrile Composite Films", *Cellulose* 24.4 (2017): 1745-1758.
15. J. Luo, H. Chang, **P.-H. Wang**, R. J. Moon, S. Kumar, "Cellulose Nanocrystals Effect on the Stabilization of Polyacrylonitrile Composite Films", *Carbon* 134, 92-102 (2018).
16. M.H. Kirmani, P.V. Gulgunje, J Ramachandran, P.J. Arias-Monje, **P.-H Wang**, S. Kumar, "Learning from Nature: Molecular Rearrangement in the Bismaleimide System Leading to Dramatic Increase in Impact Strength." *ACS Applied Polymer Materials* 2.2 (2020): 758-767.
17. J. Beyer, **P.-H. Wang**, I. A. Buyanova, S. Suraprapapich, C.W. Tu and W. M. Chen, "Effects of a Longitudinal Magnetic Field on Spin Injection and Detection in InAs/GaAs Quantum Dot Structures", *J. Phys.: Condens. Matter* **24**, 145304 (2012).