**Bernadeta R. Srijanto**

Cleanroom Engineer

Nanofabrication Research Group

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**Education**

University of Tennessee-Knoxville:

Ph.D. 2008 Electrical Engineering.

M.S. 2002 Electrical Engineering

**Professional Positions**

2015 – present **Cleanroom Engineer, Center for Nanophase Materials Sciences (ORNL)**

Responsible for maintaining the electron-beam lithography tool (JEOL 8100), ensuring performance of the tool, developing user guides, and serving as technical contact on user projects requiring the EBL. Responsibility for other tools: photolithography contact aligner (SUSS) and acid/base chemical hood. Perform process development to support user projects and in-house research, and new equipment process capabilities as needed.

2013 – 2015 **Research Associate, Dept. of Materials Science and Engineering (University of Tennessee**)

Support cleanroom operation and safety.

Develop micro- and nanofabrication process development for user projects and in-house research.

2009 – 2012 **Postdoctoral Research Associate (ORNL)**

Conduct research focusing on fabrication and characterization of silicon nanowires transistors, microfluidics platforms to study molecular transport, and bacterial chemotaxis.

**Awards**

Outstanding CNMS Staff Member Award (2022)

ORNL Awards Night Operational Performance/Mission Support Team (2016)

**Patent**

1. V. Kertesz, B.R. Srijanto, Collier C.P., Cahill J.F.

“Laser Ablation Sampling System and Method”

Patent granted: December 12, 2023

U.S. Patent No. 11,841,297 B2 (U.S.A)

1. V. Kertesz, B.R. Srijanto, Collier C.P., Cahill J.F.

“Laser ablation sampling system and method”

Patent granted: November 23, 2021

Patent number: 11,181,446 B2 (U.S.A)

**Professional Memberships**

American Vacuum Society

**Publications** (ORCID 0000-0002-1188-1267)

E. K. Beutler, V. Kumar, G. H. K. Duddy, M. R. Bourgeois, B. R. Srijanto, J. A. Hachtel, D. J. Masiello, J. P. Camden “Localizing Low-Grade Heat Using Hybrid Photonic-Phononic Materials” *ACS Energy Lett.,* 9, 3, 941–947 (2024).

J. M. Morgan, J. Jelenska, D. K Hensley, P. Li, **B. R Srijanto**, S.T Retterer, R. F Standaert, J. L Morrell-Falvey, J. T. Greenberg. “Using Vertically Aligned Carbon Nanofiber Arrays on Rigid or Flexible Substrates for Delivery of Biomolecules and Dyes to Plants” *Journal of Visualized Experiments : Jove*. 197 Jul(2023).

V. Iyer, K. Roccapriore, J. Ng, **B. R. Srijanto**, D. Lingerfelt, B. Lawrie “Photon bunching in cathodoluminescence induced by indirect electron excitation” *Nanoscale*, 15, 9738-9744 (2023).

T. C. Messina, **B. R. Srijanto**, C. P. Collier, I. I. Kravchenko, C. I. Richards “Gold ion beam milled gold zero-mode waveguides” *Nanomaterials,* 12 (10), 1755 (2022).

W. Huang, X. He, C. Liu, X. Li, Y. Liu, C. P. Collier, **B. R. Srijanto**, J. Liu, J. Cheng “Droplet evaporation on hot micro-structured superhydrophobic surfaces: analysis of evaporation from droplet cap and base surfaces” *Int. J. Heat Mass Transf.*, 185, 122314 (2022).

A. A. Masud, S. M. N. Arefin, F. Fairooz, X. Fu, F. Moonschi, **B. R. Srijanto**, K. R. Neupane, S. Aryal, R. Calabro, D. -Y. Kim, C P. Collier, M. H. Chowdhury, C. I. Richards “Photoluminescence enhancement, blinking suppression, and improved biexciton quantum yield of single quantum dots in zero mode waveguides” *J. Phys. Chem. Lett.*, 12 (13), 3303 (2021).

V. Kertesz, J. F. Cahill, **B. R. Srijanto**, C. P. Collier, M. Vavrek, B. Chen “Absolute quantitation of propranolol from 200‐μm regions of mouse brain and liver thin tissues using laser ablation‐dropletProbe‐mass spectrometry” *Rapid Communications in Mass Spectrometry*, 35 (5), e9010 (2021).

V. Kertesz, J. F. Cahill, **B. R. Srijanto**, C. P. Collier, M. Vavrek, B. Chen “Integrated laser ablation‐dropletProbe‐mass spectrometry for absolute drug quantitation, metabolite detection, and distribution in tissue” *Rapid Communications in Mass Spectrometry,* 35 (23), e9202 (2021).

X. He, J. Cheng, C. P. Collier, **B. R. Srijanto**, D. P. Briggs “Evaporation of squeezed water droplets between two parallel hydrophobic/superhydrophobic surfaces” *J Colloid Interface Sci*, 576, 127 (2021).

E. S. Muckley, L. Collins, **B. R. Srijanto**, I. N. Ivanov “Machine learning‐enabled correlation and modeling of multimodal response of thin film to environment on macro and nanoscale using “lab‐on‐a‐crystal” *Adv. Funct. Mater.*, 30 (10), 1908010 (2020).

A. Al Masud, W. E. Martin, F. H. Moonschi, S. M. Park, B. **R. Srijanto**, K. R. Graham, C. P. Collier, C. I. Richards “Mixed metal zero-mode guides (ZMWs) for tunable fluorescence enhancement” *Nanoscale Adv.*, 2 (5), 1894 (2020).

W. L. Boldman, C. Zhang, T. Z. Ward, D. P. Briggs, **B. R. Srijanto**, P. Brisk, P. D. Rack “Programmable electrofluidics for ionic liquid based neuromorphic platform “*Micromachines*, 10 (7), 478 (2019).

K. Wang, A. A. Puretzky, Z. Hu, **B. R. Srijanto**, X. Li, N. Gupta, H. Yu, M. Tian, M. Mahjouri-Samani, X. Gao, A. Oyedele, C. M Rouleau, G. Eres, B. I Yakobson, M. Yoon, K. Xiao, D. B. Geohegan “Strain tolerance of two-dimensional crystal growth on curved surfaces “*Sci. Adv.,* 5 (5), eaav4028 (2019).

F. Liu, S. M. Abel, L. Collins, **B. R. Srijanto**, R. Standaert, J. Katsaras, C. P. Collier “Geometry‐Dependent Nonequilibrium Steady‐State Diffusion and Adsorption of Lipid Vesicles in Micropillar Arrays” *Adv. Mater. Interfaces*, 6 (9), 1900054 (2019).

W. Shi, J.R. Vieitez, A. S. Berrier, M. W. Roseveare, D. A. Surinach, **B. R. Srijanto**, C. P. Collier, J. B Boreyko “Self-stabilizing transpiration in synthetic leaves” *ACS applied materials & interfaces,* 11 (14), 13768 (2019).

S. F. Ahmadi, S. Nath, G. J. Iliff, **B. Srijanto**, C. P. Collier, P. Yue, J. B. Boreyko “Passive antifrosting surfaces using microscopic ice patterns” *ACS Applied Materials & Interfaces*, 10 (38), 32874 (2018).

T. Wulz, W. Gerding, N. Lavrik, D. Briggs, **B. Srijanto**, K. Lester, D. Hensley, S. Spanier, E. Lukosi “Realization of deep 3D metal electrodes in diamond radiation detectors”, *Appl. Phys. Lett.*, 112 (22), 222101 (2018).

H. Yu, N. Gupta, Z. Hu, K. Wang, **B. R Srijanto**, K. Xiao, D. B Geohegan, B. I Yakobson “Tilt Grain Boundary Topology Induced by Substrate Topography”, *ACS Nano*, 11 (9), 8612 (2017).

W. E. Martin, N. Ge, **B. R Srijanto**, E. Furnish, C. P. Collier, C. A. Trinkle, C. I. Richards “Real-Time Sensing of Single-Ligand Delivery with Nanoaperture-Integrated Microfluidic Devices”, *ACS Omega*, *2* (7), 3858 (2017).

M. D. Mulroe, **B. R. Srijanto**, S. F. Ahmadi, C. P. Collier, J. B Boreyko “Tuning Superhydrophobic Nanostructures to Enhance Jumping-Droplet Condensation”, *ACS Nano*, *11* (8), 8499 (2017).

R. JT. Nicholl, N. V. Lavrik, I. Vlassiouk, **B. R Srijanto**, K. I. Bolotin “Hidden area and mechanical nonlinearities in freestanding graphene”, *Phys. Review Letter*, 118, 266101 (2017).

T. Tai, V. Kertesz, M.‐W. Lin, **B. R Srijanto**, D. Hensley, K. Xiao, G. J. Van Berkel “Polymeric Spatial Resolution Test Patterns for Mass Spectrometry Imaging Using Nano‐Thermal Analysis with Atomic Force Microscopy”, *Rapid Commun. Mass Spectrom.,* 31, 1204 (2017).

W. D. Hoffmann, V. Kertesz, **B. R Srijanto**, G. J. Van Berkel “Atomic Force Microscopy Thermally-Assisted Microsampling with Atmospheric Pressure Temperature Ramped Thermal Desorption/Ionization-Mass Spectrometry Analysis”, *Anal. Chem.*, *89* (5), 3036 (2017).

B. B. Lewis, B. A. Mound, **B. Srijanto**, J. D. Fowlkes, G. M. Pharr, P. D Rack Growth and nanomechanical characterization of nanoscale 3D architectures grown via focused electron beam induced deposition, *Nanoscale*, **9**, 16349 (2017).

M.A. Nguyen, **B. Srijanto**, C.P. Collier, S.T. Retterer, S.A. Sarles “Hydrodynamic trapping for rapid assembly and in situ electrical characterization of droplet interface bilayer arrays”, *Lab Chip*, 16, 3576 (2016).

W.E. Martin, **B.R. Srijanto**, C.P. Collier, T. Vosch, C.I. Richards “A comparison of single-molecule emission in aluminum and gold zero-mode waveguides”, *J. Phys. Chem. A*, 120, 6719 (2016).

R. L. Agapov, J. B. Boreyko, D. P. Briggs, B. R. Srijanto, S. T. Retterer, C. P. Collier, N. V. Lavrik “Length Scale Selects Directionality of Droplets on Vibrating Pillar Ratchet,” *Adv. Mater. Interfaces*, 1, 1400337 (2014)

W. Daming, J. H. Edgar, D. P. Briggs, S. T. Retterer, **B. R. Srijanto**, D. K. Hensley, H. M. Meyer “Atomic Layer Deposition TiO2–Al2O3 Stack: An Improved Gate Dielectric on Ga-Polar GaN Metal Oxide Semiconductor Capacitors,” *J. of Vacuum Science & Technology B*, 32, 060602 (2014)

M. Mahjouri-Samani, M. Tian, K. Wang, A. Boulesbaa, C. M. Rouleau, A. A. Puretzky, M. A. McGuire, **B. R. Srijanto**, K. Xiao, G. Eres, G. Duscher, D. B. Geohegan “Digital Transfer Growth of Patterned 2D Metal Chalcogenides by Confined Nanoparticle Evaporation,” ACS Nano 8, 11567 (2014).

K. He, S. T. Retterer, **B. R. Srijanto**, J. C. Conrad, R. Krishnamoorti “Transport and Dispersion of Nanoparticles in Periodic Nanopost Arrays,” ACS Nano 8, 4221 (2014).

R. L. Agapov, J. B. Boreyko, D. P. Briggs, **B. R. Srijanto**, S. T. Retterer, C. P. Collier, N. V. Lavrik “Length scale of Leidenfrost Rachet Switches Droplet Directionality,” *Nanoscale* 6, 9293 (2014).

E. Wright, S. Neethirajan, K. Warriner, S. T. Retterer, **B. R. Srijanto** “Single Cell Swimming Dynamics of Listeria Monocytogenes Using a Nanoporous Microfluidic Platform,” *Lab on a Chip* 14, 938 (2014)

R. L. Agapov, J. B. Boreyko, D. P. Briggs, **B. R. Srijanto**, S. T. Retterer, C. P. Collier, N. V. Lavrik “Asymmetric

Wettability of Nanostructures Directs Leidenfrost Droplets,” ACS Nano 8, 860 (**2014**).

# R. L. Agapov, B. R. Srijanto, C. Fowler, D. P. Briggs, N. V. Lavrik, M. J. Sepaniak “Lithography-Free Approach to Highly Efficient, Scalable SERS Substrates Based on Disordered Clusters of Disc-On-Pillar Structures,” *Nanotechnology* 24, 505302 (2013).

J. B. Boreyko, **B. R. Srijanto**, T. D. Nguyen, C. Vega, M. Fuentes-Cabrera, C. P. Collier “Dynamic Defrosting on Nanostructured Superhydrophobic Surfaces,” *Langmuir* 29, 9516 (2013).

**B. R. Srijanto**, C. P. Cheney, D. L. Hedden, A. C. Gehl, P. B. Crilly, M. A. Huestis, T. L. Ferrell “Piezoresistive Microcantilevers-based Cocaine Biosensors,” *Sensor Letters* 10 (3-4), 850 (2012).

**B. R. Srijanto**, S. T. Retterer, J. D. Fowlkes, M. J. Doktycz “Nanostructured Silicon Membranes for Control of

Molecular Transport,” *J. of Vacuum Science & Technology B*, 28, C6P48-C6P52 (2010)

**Graduate and Postdoctoral Advisors:**

Graduate Advisor: Donald W. Bouldin (University of Tennessee-Knoxville)

Thomas L. Ferrell (University of Tennessee-Knoxville)

Paul B. Crilly (University of Tennessee-Knoxville)

Postdoctoral Advisor: Scott T. Retterer (ORNL)