BENJAMIN CERJAN

Email: bcerjan@gmail.com | Mobile: (925) 683-7216 | Website: ben.waldocorp.com

Education

RICE UNIVERSITY Houston, TX
PhD, Physics November 2018
Thesis: *Aluminum Plasmonics for Detection and Spectroscopy*
Area of Study: *Applications of nano-antenna structures*
Advisor: Naomi Halas

CARLETON COLLEGE Northfield, MN
BA, Physics, Cum Laude June 2012

Skills

- Mentoring and advising other researchers in the use of advanced scientific instrumentation
- Expertise with electronics, signal acquisition, and signal analysis
- Visible, IR, and Raman spectroscopy, SEM, e-beam lithography, RIE, ellipsometry, ALD, RF-sputtering, thermal and e-beam evaporation
- Proficiency with Mathematica, MATLAB, CAD, PHP, SQL, LabVIEW, Lumerical, git, NGINX, Javascript, jQuery, C, C++, WebAssembly, Python, COMSOL

Experience

PURDUE UNIVERSITY, Dept. of Chemistry
Instrumentation Specialist October 2021 to Present
- Nanofabrication specialist, assisting with design and fabrication of photonic systems
- Electronic design, PCB layout, and fabrication
- Scientific computing and programming

RICE UNIVERSITY, Dept. of Electrical and Computer Engineering
Postdoctoral Scholar January 2019 to September 2021
Area of Study: *Tunable metasurfaces for vibrant color*
- Developed new methods for fabrication of nanoscale metasurfaces at scale
- Created master stamps and measurement systems for nanoimprint lithography
- Measured apparent color of metasurfaces using chromaticity and spectroscopy

RICE UNIVERSITY, Dept. of Physics and Astronomy
Graduate Researcher April 2014 to December 2018
- Fabricated IR-sensitive plasmonic structures and demonstrated contactless detection of target molecules
- Predicted device response using finite-element and finite-difference time-domain electromagnetic simulations
- Developed compressive sensing algorithms and applied data analytics
- Manager of and lead trainer for essential research equipment, including SEM, FTIR, sputter coater, plasma cleaner

CARLETON COLLEGE, Dept. of Physics and Astronomy
Research Intern / Undergraduate Researcher September 2009 to July 2013
- Provided leadership and guidance for undergraduate researchers
- Designed and machined components; wrote specifications for optical component procurement
- Undergraduate work study as network administrator for the physics department

Leadership and Activities

- President, Rice chapter of SPIE, an optics and photonics technology professional organization (2015-2017)
- Volunteer speaker, Spring Woods High School annual STEM conference (2014-2017)
- Carleton Water Polo Club Team (2010-2012), Captain (2011-2012)
- Custom-made software development; Home server administration; Sourdough bread baking; Board games

BENJAMIN CERJAN

Awards

- Best Presentation Award, SCI Summer Research Colloquium, 2014 and 2019
- Undergraduate Poster Presentation Winner, 2013 APS March Meeting
- Warren Ringlien Memorial Prize for construction and use of complicated scientific instruments, 2012 Carleton College
- Senior Thesis with Distinction, 2012 Carleton College

Publications

- Cerjan, B.; Gerislioglu, B.; Link, S.; Nordlander, P.; Halas, N.J. Towards Scalable Plasmonic Fano-Resonant Metasurfaces for Colorimetric Sensing. *Nanotechnology* **2022**, 30 (40), pp 405201

- Cerjan, B. and Halas, N.J. Toward a Nanophotonic Nose: A Compressive Sensing-Enhanced, Optoelectronic Mid-Infrared Spectrometer. *ACS Photonics* **2019**, 6 (1), pp 79-86.

- Zheng, B.; Zhao, H.; Cerjan, B.; Yazdi, S.; Ringe, E.; Nordlander, P.; Halas, N.J. A Room-Temperature mid-Infrared Photodetector for On-Chip Molecular Vibrational Spectroscopy. *Appl. Phys. Lett.* **2018**, 113:10.

- Tanzid, M.; Ahmadivand, A.; Zhang, R.; Cerjan, B; Sobhani, A.; Yazdi, S.; Nordlander, P.; Halas, N.J. Combining Plasmonic Hot Carrier Generation with Free Carrier Absorption for High-Performance Near-Infrared Silicon-Based Photodetection. *ACS Photonics* **2018**, *5* (9), pp 3472–3477.

- Dong, L.; Yang, X.; Zhang, C.; Cerjan, B.; Zhou, L.; Tseng, M.L.; Zhang, Y.; Alabastri, A.; Nordlander, P.; Halas, N.J. Nanogapped Au Antennas for Ultrasensitive Surface-Enhanced Infrared Absorption Spectroscopy. *Nano Letters*, **2017**, 17 (9), pp 5768–5774.

- Tumkur, T.; X. Yang, X.; B. Cerjan, B.; Halas, N.J.; Nordlander, P.; Thomann, I. Photoinduced Force Mapping of Plasmonic Nanostructures. *Nano Letters* **2016**, 16 (9), pp 7942-7949.

- Cerjan, B.; Yang, X.; Nordlander, P.; Halas, N.J. Asymmetric Aluminum Antennas for Self-Calibrating Surface-Enhanced Infrared Absorption Spectroscopy. *ACS Photonics* **2016**, 3, pp 354-360.

- King, S.; Liu, L.; Yang, X.; Cerjan, B.; Everitt, H.O.; Nordlander, P.; Halas, N.J. Fano Resonant Aluminum Nanoclusters for Plasmonic Colorimetric Sensing. *ACS Nano* **2015**, 9 (11), pp 10628-10336.

- Baylor, M.-E.; Cerjan, B.; Pfiefer, C. R.; Boyne, R. W.; Couch, C. L.; Cramer, N. B.; Bowman, C. N.; McLeod, R. R. Monolithic Integration of Optical Waveguide and Fluidic Channel Structures in a Thiol-Ene/methacrylate Photopolymer. *Opt. Mater. Express* **2012**, 2, pp 1548.