

# VINSE

VANDERBILT INSTITUTE OF NANOSCALE SCIENCE AND ENGINEERING  
SPRING 2021 NEWSLETTER



## A Note from the Director

Despite all that is going on in the world these days, one of the constant bright spots for me is learning about all the exciting research discoveries made by VINSE faculty, postdocs, students, and other researchers. If you are not already a regular listener of the VINSE Spotlight Podcast, I encourage you to tune in as a fun way to hear about some of the most recent scientific advances reported by members of the VINSE community. If you are pursuing new research directions in nanoscience and nanoengineering, VINSE would love to hear about them. Please stop by my Director's Coffee Hour later this month to chat, join one of our virtual gatherings in March, or reach out to the VINSE technical staff to discuss how VINSE can best support your new initiatives. Remember that VINSE offers pilot funds for new projects seeking preliminary data for external funding opportunities. There have been several success stories in our first year of pilot funds, and I look forward to continuing to help launch more new projects this year.

I hope everyone has a great semester. Stay safe.

Sharon Weiss  
Director, VINSE

## Spring Events

- VINSE/DSI Collaborative Seminar, Huo & Valentine – February 5
  - Director’s coffee hour – February 19
  - VINSE Colloquium, Krishnan Rajeshwar – February 24
  - VINSE Colloquium, Deborah Kelly – March 3
  - VINSE/DSI Collaborative Seminar, Chang & Weiss – March 5
  - Co-hosted Colloquium with DSI, Kristofer Reyes – March 17
  - VINSE faculty appreciation virtual gathering – March 19
  - VINSE student/postdoc appreciation virtual gathering – March 25
  - VINSE Colloquium, Manish Kumar – March 31
  - VINSE/DSI Collaborative Seminar, TBD – April 2
  - VINSE Colloquium, Nate Kinsey – April 7
  - VINSE/DSI Collaborative Seminar, TBD – May 7
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## Things to Note:

- Director’s coffee hour 11am-12pm: Please stop by to talk about your research, new areas of collaboration, or tool wish list items. [Join Session](#)
  - To bring together our community during these days of physical distancing, we are hosting two virtual social gatherings in March. More details will be emailed and will also be provided on the VINSE website soon. A gift box will be mailed to all registered participants.
  - Our webpage now offers our community a chance to recognize VINSE staff when they receive exceptional support: [Form](#)
  - The VINSE Spotlight Podcast is moving to bi-weekly installments
  - A huge thank you to everyone that supported advertising the 2021 REU summer program!
  - Summer 2021 applications are now open for the VINSE Tech Crew - deadline March 15
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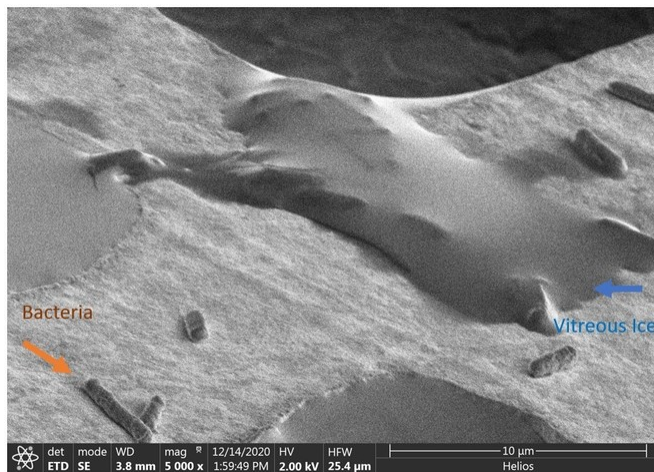
## VentureWell Grant

VINSE staff member Alice Leach has won a faculty grant from VentureWell to fund a new immersive undergraduate course in the VINSE cleanroom. This exciting opportunity in collaboration with Yiorgos Kostoulas Professor of Engineering Management, the Wondr'y and the CTTC will give Vanderbilt undergraduate students the opportunity to design and build their own nanotechnology prototype using the VINSE facilities. Look out for the new course in the 2021-2022 academic year

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## Advanced Cryo-Electron Microscopy

Cryo sample preparation and imaging of cells, bacteria, hydrogels, colloidal suspensions and more has commenced using the new Quorum Cryo-EM preparation system on the Helios G3X FIB/SEM. High quality images can be obtained at temperatures as low as  $-190^{\circ}\text{C}$ . Please check out recent images obtained by VINSE users below and contact James McBride ([james.r.mcbride@vanderbilt.edu](mailto:james.r.mcbride@vanderbilt.edu)) if you would like more information.

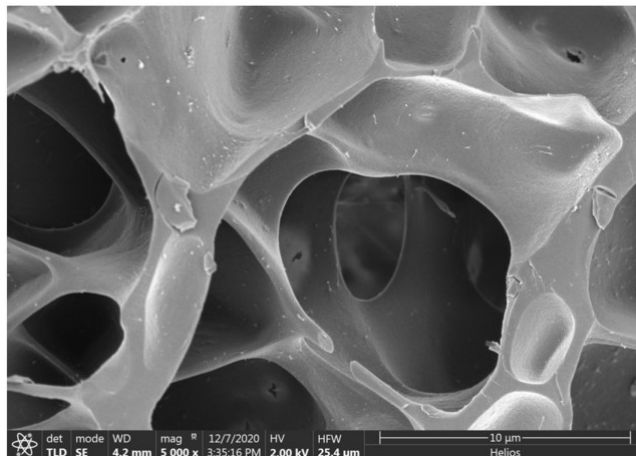


### Bacteria

Fixed bacteria deposited onto a TEM grid, plunge frozen in liquid ethane and sublimated for 10 minutes. The sample was imaged without a Pt coating at  $-170^{\circ}\text{C}$ . Sample prepared by Shannon Kordus from the Lacy group and Scott Collier from the Center for Structural Biology Cryo-EM Facility.

### Hydrogel

A small drop of the hydrogel was plunge frozen in nitrogen slush, freeze fractured, sublimated, coated in platinum and imaged at  $-170^{\circ}\text{C}$ . Sample provided by Bryan Dollinger from the Duvall group.



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## VINSE - DSI Collaboration

VINSE and the Data Science Institute (DSI) will be organizing a co-hosted seminar series this spring to highlight problems at the intersection of nanoscience and data science. Presentations will be given on both current research projects and topics of interest for potential future collaborative pursuits at Vanderbilt. Speakers will give a broad overview of their research area and discuss challenges where interdisciplinary efforts in nanoscience and data science are, or could be, beneficial. Through these talks and accompanying discussions we hope to build new collaborations between VINSE and DSI researchers. These seminars would also be a place for Masters students and undergraduates to get connected with research opportunities. The talks will be held on the first Friday of each month at 12PM, starting today, February 5th. [Register Here](#)

VINSE will also be co-hosting at least one colloquium per year with DSI that focuses on research bridging nanoscience and data science. The first joint talk will be given by Dr. Kristofer Reyes at 4PM on March 17: "Closed-loop design for autonomous materials development." [Register Here](#)

The Data Science Institute offers a series of free workshops weekly throughout the semester on tools, methods, and frameworks offered by data science. Covering topics ranging from managing research and analytics projects with distributed teams, to using machine learning to answer research questions, the workshops are hands-on, offered remote, and are recorded. [Register Here](#)



## Staff Engineer II

As most of you know, Bill Martinez left Vanderbilt on January 22nd. The Staff Engineer II job has been posted and applications are under review. VINSE remains committed to supporting your research initiatives, and our technical staff will continue to be available to support all training, process development, and characterization needs for our users. Please email

[vinse-cleanroom@vanderbilt.edu](mailto:vinse-cleanroom@vanderbilt.edu) for specific questions pertaining to ongoing projects in the cleanroom and [vinse@vanderbilt.edu](mailto:vinse@vanderbilt.edu) for all other inquiries.

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## Virtual Training

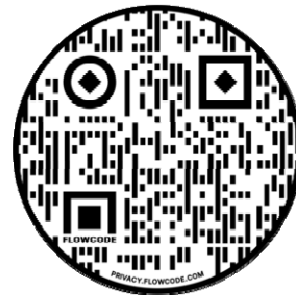
With the COVID-19 restrictions we face now, the Cleanroom and Analytical Lab orientations, safety and conduct of operations manuals, and acknowledgement forms are now available through a virtual format on the [Get Access](#) page on the VINSE website.



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## Specimen Prep Tracking

Tracking time and consumables in the specimen prep lab has never been easier. Log your usage using the QR code services available in the lab.



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