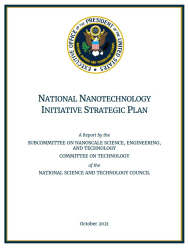
Issue 50

Stay informed about what's happening on nanoHUB! Check out recent news, upcoming events, new resources and more below.

nanoHUB News

2021 National Nanotechnology Initiative Strategic Plan


NATIONAL NANOTECHNOLOGY INITIATIVE STRATEGIC PLAN

A Report by the SUBCOMMITTEE ON NANOSCALE SCIENCE, ENGINEERING, AND TECHNOLOGY COMMITTEE ON TECHNOLOGY of the NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

October 2021

The National Nanotechnology Coordination Office (NNCO) recently released the 2021 National Nanotechnology Initiative (NNI) Strategic Plan. nanoHUB is proud to play a role along with many other projects in the nanotechnology community to support this initiative over the next five years.

Read the full plan here.

Semiconductor Workforce Development

You may have noticed a new and exciting addition to the nanoHUB homepage! There, you will find a link to our Semiconductor Education and Workforce Development page. For over two decades, nanoHUB has served millions of users with courses and online simulation in the broad area of semiconductors. You can now easily find this valuable content all in one place.

The new page contains curated content for users interested in semiconductor education. Along with nanoHUB's unique immersive learning through simulation, users will find open courseware, free textbooks, commercial software and more by visiting the Semiconductor Workforce Development page.

Now Available on nanoHUB: Educational Version of Thermo-Calc

Did you know? Users can use the Thermo-Calc Software Educational Package on nanoHUB for free. The software is offered for online simulations through a collaboration between Thermo-Calc Software AB and nanoHUB. The package includes a limited version of the Thermo-Calc software, a collection of demo databases, and educational material for teaching and learning about the software and about thermodynamic and kinetic theory.

To gain free access to Thermo-Calc on nanoHUB, users are required to join the Thermo-Calc Educational Version nanoHUB group. Before being admitted to the group, users are asked to make their organization and position public on their nanoHUB profile. When requesting to join, users are agreeing to Thermo-Calc's End User License Agreement. Visit the group page for complete instructions on how to join.

Call for Content

Thermo-Calc Teaching Materials

With the recent addition of the Thermo-Calc Software Education Package on nanoHUB, we are seeking teaching materials from instructors. If you have any Thermo-Calc related homework assignments, problem sets, tutorials, video demos or other items designed for teaching, please consider making them available on nanoHUB.

Learn how to submit teaching materials by viewing How to Submit Teaching Materials: A Quick Tutorial in the New Resources section below.

nanoHUB Tips and Tricks

Adding a Resource URL to Pages of a New nanoHUB Publication

When publishing a new resource in nanoHUB, it's beneficial to include the resource URL in the footer of all pages in the publication. This ensures that users can easily navigate back to the full resource page from any of the document components.

You can determine the resource URL for the resource *before* it is published. When you get to Step 3 of the publishing process (as shown in this tutorial video at around 8:27), you can see the resource number in the URL. It will have a form such as: https://nanohub.org/resources/draft/**nnnnnn**?step=3, where **nnnnnn** is the assigned resource number. Your resource's final URL will be of the form: https://nanohub.org/resources/**nnnnnn**. Now you have the URL of your new resource!

Upcoming Events

nanoBIO Simulation in Education Workshop Series

Join NCN's nanoBIO node for their Spring Recitation series on simulation in education. These workshops are intended for researchers and educators to examine implementations of nanoBIO and other cloud-based applications in educational settings.

Upcoming Sessions:

Title: Using nanoHUB Apps to Teach Linker-mediated Assembly of Virus-like Particles into Ordered Arrays via Electrostatic Control
Date: March 17th 2022, 3:00 PM EST

Register Here

Title: How to create an educational module using cloud based apps: mapping learning objectives and audience onto the tool.
Date: April 14th 2022, 3:00 PM EST

Register Here

For more information, please visit the nanoBIO seminar page.

New Resources

How to Submit Teaching Materials: A Quick Tutorial

This short tutorial demonstrates how to publish teaching materials on nanoHUB.

Teaching material consist of any material that might assist another instructor in teaching subject material, including homework assignments, tutorials, presentation materials or any other materials designed for teaching.

Private sharing (e.g. solution sets) is available in nanoHUB. Instructors who have questions are welcome to contact nanoHUB support at contact@nanohub.org.

Recitation Series for Semiconductor Education

In this series, Dr. Gerhard Klimeck introduces the ABACUS tool suite, which includes simulations of crystal structures and lattices, bandstructure and band models, bulk semiconductors, PN Junctions, Bipolar Junction Transistors, MOS Capacitors, and MOSFETs. The objective of this recitation series is to enable faculty to enhance semiconductor classes with interactive simulations and engage students in more active forms of learning.

The ABACUS group page highlights features of the component apps along with illustrative animations.

ML-based Surrogate Models for Nusselt Number and Friction Factor Prediction in Constant Cross-Section

The ML-based Surrogate Models tool predicts the fully-developed laminar Nusselt number (Nu) and friction factor for any cross-sectional shape of a flow channel. The Nusselt number prediction is available for two different constant heat flux boundary conditions, H1 and H2. The tool also presents a demo for different cross-sections.

Monte Carlo Electron Dynamics

The Monte Carlo Electron Dynamics tool simulates non-stationary electron transport in emerging semiconductors including beta gallium oxide using Monte Carlo approach. It is useful to study how particle distribution function evolves in time and allows the user to extract velocity-field and mobility characteristics. A model for surface roughness, based on Ando's formalism, has also been included into the simulator.

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