Issue 7

Materials scientists find a world of simulations at TMS 2012

As computational techniques become increasingly important in the design and development of new materials, scientists and engineers are accessing nanoHUB tools from unexpected locations — recently, Walt Disney World Resort, Florida, the site of TMS 2012, the annual conference of The Minerals, Metals & Materials Society held March 11-15. A short course, conference talk, and booth in the exhibition highlighted nanoHUB resources.

Katsuyo Thornton, associate professor of materials science and engineering, University of Michigan, used the nanoHUB tool DFT Calculations with Quantum ESPRESSO in her short course, Integrated Computational Materials Education on March 11.

"nanoHUB eliminates the need for purchasing or installing software and allows the participants to use it without complications," Thornton says.

Students taking the short course included faculty involved in integrating computational techniques into the undergraduate curriculum and others interested in learning the fundamentals and applications of computational thermodynamics tools. Read More

Simulations prompt insight into student learning

Engineering professors are incorporating simulation programs in their courses — without having to write them — and engaging their students in new ways with nanoHUB resources. Tanya Faltens, lecturer at California State Polytechnic University, Pomona, began using nanoHUB simulations in her upper-division electrical engineering class the week after attending her first nanoHUB workshop, and she has been using nanoHUB simulations in her courses ever since. Faltens says nanoHUB assignments can generate enthusiasm among students.

"Any little change to a class takes extra effort, but I am still looking for — and finding — appropriate tools and lessons on nanoHUB. Over time, it seems as though more of the material is useful for my classes," she says. Read more

Students of nanoHUB-U enthusiastic about the inaugural course and format

When the inaugural class offered by nanoHUB-U concluded March 9, students offered anonymous, overwhelmingly positive feedback about Supriyo Datta's teaching and asked for more courses to be offered using the same online format.

Over 600 students enrolled in the course, titled Fundamentals of Nanoelectronics, Part 1: Basic Concepts. Over 330 students are enrolled in Datta's current course on quantum models.

Additional nanoHUB-U courses are being developed by Purdue University professors for the fall of 2012 on atomic force microscopy, taught by Arvind Raman and Ron Reifenberger, and the fundamentals of nanotransistors, taught by Mark Lundstrom. Read more

Notable quote: Global impact

"nanoHUB is definitely a very important resource for research students. nanoHUB is world recognized. Its impact is global. Two weeks ago, I was in Switzerland giving an invited talk on the first inversion-mode gate-all-around III-V MOSFETs paper, and a graduate student came up and said he is taking a class of Professor Datta's through nanoHUB."
—Peide Ye, Professor of Electrical and Computer Engineering, Purdue University

Configurable web-based groups meet diverse needs

Nearly 160 groups on nanoHUB help group members share content and conversation, either privately or with the world.

"Many groups have a specific, common research interest," says Lynn Zentner, nanoHUB's technical director. "Other groups have been established by the lead of a software development team or the instructor of a class."

NEW RESOURCES

nanoHUB members published nearly 120 new tools, presentations, articles, and more in the past three months, including:

• 1D Finite Different Method Conduction Heat Transfer Tool: Solves 1D conduction heat transfer problems, using boundary condition types 1, 2, and 3, but does not include generation. Intended for an undergraduate heat transfer course.

• OCTAVIEw: Provides a way to run/debug short scripts written in the Octave/MATLAB syntax. Includes a debug tab and console area to show the printed output from the program.
More new resources

HOW TO CITE RESOURCES

Each nanoHUB resource has a specific identifier for use in a citation. The identifier is given at the bottom of the resource's Web page, along with buttons that give users of BibTex or EndNote automatically generated, downloadable citations. Some resource pages also provide citations of related papers.

UPCOMING EVENTS

May 21-June 1: University of Illinois 2012 Biophotonics Summer School — Conference at University of Illinois at Urbana-Champaign. Topics: Biomolecular sensing, nanoprobes, nanoscopy, nanoplasmonics, and more.
Read more

June 11-22: Integrated Computational Materials Education Summer School Conference at University of Michigan, Ann Arbor. Topics: The theory and practice of advanced computational techniques and integrating them into the undergraduate materials science curriculum.
Read more

July 16-20: Electronics from the Bottom Up: Summer School 2012 Cosponsored by Intel, the Network for Computational Nanotechnology, and Purdue University in West Lafayette, Indiana. Topics: New concepts and approaches, emerging from current research on nanoscience, are applied to non-equilibrium problems like nanoscale transistors, energy conversion

When setting up a group on nanoHUB, group managers can choose from two types of group discoverability and four types of group membership. Any nanoHUB user can establish a group by completing a nanoHUB form to describe and set up the group. That user then becomes the group's first manager. Read more

devices, and bio-sensors. Read more.

ADVERTISE YOUR EVENTS

Use your nanoHUB account to publicize seminars, workshops, conferences, lectures, and other events of interest to the nano community in the nanoHUB calendar. Add events

IN THE NEWS

Researchers affiliated with the Network for Computational Nanotechnology are making headlines with atomistic modeling using high-performance computing:

The New York Times — Physicists create a working transistor from a single atom. Read more

BBC — News on the next stage in the development of a single-atom transistor. Read more

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