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**The Information Science & Technology Center**

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**Colorado State University's  
Information Science and Technology Center (ISTeC)  
presents two lectures by**



**Sharon Glotzer**

**University of Michigan, Ann Arbor  
Stuart W. Churchill Collegiate Professor of  
Chemical Engineering,  
and Professor of Materials Science and  
Engineering, Physics**

## **ISTeC Distinguished Lecture**

**in conjunction with the  
Electrical and Computer Engineering Department and  
Computer Science Department Seminar Series**

# **“All Hail the GPU: How the Video Game Industry is Transforming Molecular and Materials Simulation”**

**Monday, May 3, 2010**

Reception: 10:30 a.m., Computer Science Room CS305

Lecture: 11:00 – 12:00 noon

Location: Computer Science 130



**Department of Chemistry Special Lecture**  
*sponsored by ISTeC*

# **“From Aristotle to Onsager: Packing and Assembling Tetrahedra”**

**Monday, May 3, 2010**

Reception: 3:45 p.m. Chemistry Building Room B204

Lecture: 4:00 – 4:50 p.m.

Location: Chemistry Building Room B202

# ABSTRACTS

## **“All Hail the GPU: How the Video Game Industry is Transforming Molecular and Materials Simulation”**

Graphics processors (GPUs) traditionally developed for video games are now accessible for use by scientific simulation codes. With speeds reaching 2 teraflop/s on a single chip, GPUs are far faster than today's CPUs for highly data parallel problems. In this talk, we describe their emerging importance for molecular and materials simulation, what they can do, how they're being used, and how you can learn to use them. We also discuss current trends, challenges, and recent initiatives in computational science and engineering research and education.

## **“From Aristotle to Onsager: Packing and Assembling Tetrahedra”**

The packing of shapes has interested humankind for millennia. We investigate the packing of hard, regular tetrahedra and show that entropy alone can order them into thermodynamically stable structures both simple and unexpectedly complex. These structures can be compressed to packing densities much greater than that of spheres, and as high as 85.63%, the current world record. We explore adding interactions to nanoscale CdTe and CdSe tetrahedra, which promotes their assembly into sheets, wires, and twisted ribbons.

## **SPEAKER BIOGRAPHY**

**Dr. Sharon C. Glotzer** (<http://www.engin.umich.edu/dept/che/chemengin/people/glotzer.html>) is the Stuart W. Churchill Collegiate Professor of Chemical Engineering and Professor of Materials Science and Engineering. She also holds faculty appointments in Physics, Applied Physics, and Macromolecular Science and Engineering. Her research focuses on computational nanoscience and simulation of soft matter, self-assembly and materials design. She has published has over 140 archival papers and has given over 200 invited and keynote lectures. Professor Glotzer is a Fellow of the American Physical Society, holds a prestigious National Security Science and Engineering Faculty Fellowship from the DoD, and recently received the Charles M.A. Stine Award from the American Institute of Chemical Engineers. She has served on numerous National Academies' committees on such topics as technology surprise; biomolecular materials and processes; modeling, simulation and games; solid-state sciences; and defense intelligence. Professor Glotzer is involved in many advisory roles to federal granting agencies on numerous research topics, including, most recently, simulation-based engineering and science. She is also the co-founding director of a new Virtual School of Computational Science and Engineering. She currently serves as the director of Research Computing for the University of Michigan College of Engineering, and is the founding director of the UM Institute for Computational Science & Engineering.

**ISTeC (Information Science and Technology Center)** is a university-wide organization for promoting, facilitating, and enhancing CSU's research, education, and outreach activities pertaining to the design and innovative application of computer, communication, and information systems. For more information, please see [ISTeC.ColoState.edu](http://ISTeC.ColoState.edu).

**Both lectures are open to the public.**