Computational Biophysicist Klaus Schulten to Speak on Large-Scale Computing in Biomedicine and Bioengineering

Dr. Klaus Schulten, computational biophysicist and professor of physics at the University of Illinois at Urbana-Champaign LEIPZIG, Germany – Dr. Klaus Schulten, a leading computational biophysicist and professor of physics at the University of Illinois at Urbana-Champaign will discuss "Large-Scale Computing in Biomedicine and Bioengineering" as the opening keynote address at the 2014 International Supercomputing Conference. ISC'14 will be held June 22-26 in Leipzig, Germany.

In his talk on Monday, June 23, Professor Schulten will discuss how the atomic perspective of living cells has assumed center stage through advances in microscopy, nanotechnology and computing. Schulten will share how decades of refinements of in silico, in vitro and in vivo technologies has opened a new era in life sciences. Researchers are now able to investigate living systems made up of millions of atoms involved in cell mechanics, viral infection, medical diagnostics and even the production of second-generation biofuels.

Schulten is the leader in the field of computational biophysics, having devoted over 40 years to establishing the physical mechanisms underlying the processes and organization of living systems — from the atomic scale up to the level of the entire organism. As of 2014, his work in biological physics has yielded over 625 publications, which have been cited over 67,000 times. Schulten is also the co-director of the NSF-funded Center for the Physics of Living Cells and his work has been honored with numerous awards, including the Distinguished Service Award of the Biophysical Society in 2013, and the IEEE Computer Society Sidney Fernbach Award in 2012. Schulten also received the prestigious Humboldt Award of the German Humboldt Foundation in 2004.

In addition to the opening address on Monday, each subsequent day of the conference will feature a remarkable keynote presentation.

On Tuesday, June 24, one of Japan's leading HPC experts, Professor Satoshi Matsuoka, will deliver a keynote titled "If You Can't Beat Them, Lead Them – Convergence of Supercomputing and Next Generation 'Extreme' Big Data. " In this thought-provoking talk, Matsuoka will share why he believes that supercomputer architectures will converge with those of big data and serve a crucial technological role for the industry. His assertion will be exemplified with a number of recent Japanese research projects in this area, including the JST-CREST "Extreme Big Data" project.

Matsuoka, a professor at the Global Scientific Information and Computing Center of Tokyo Institute of Technology (GSIC), is also the leader of TSUBAME supercomputer series and is currently heading various other projects such as the JST-CREST Ultra Low Power HPC and the JSPS Billion-Scale Supercomputer Resilience.

On Wednesday, June 25, Professor Thomas Sterling, a perennial favorite at ISC, will offer a vibrant summary of the past year in his keynote: "HPC Achievement & Impact 2014 – A Personal Perspective. " Sterling is set to track the improvements in microprocessor multicore and accelerator components as well as general system capabilities. On the topic of exascale, Sterling will talk about the international programs devoted to leading-edge HPC that will bridge

the second half of the decade. His keynote address will end with an early summary of the emerging area of interests in "beyond exascale," including superconducting logic, optical computing, neuromorphic and probabilistic computing.

Sterling is professor at the Indiana University's School of Informatics and Computing and serves as chief scientist and associate director at the PTI Center for Research in Extreme Scale Technologies (CREST). He is currently engaged in research associated with the innovative ParalleX execution model for extreme-scale computing.

In the Thursday, June 26 keynote, Professor Karlheinz Meier, a European leader in neuromorphic computing will deliver a talk titled "Brain Derived Computing beyond von Neumann – Achievements and Challenges. " In the keynote, Meier will review the current projects around the world that are focused on neuromorphic computing and introduce the work in this area that will be conducted under the European Commission's Human Brain Project (HBP). As an HBP co-director, Meier's mission will be to develop neuromorphic hardware implementations with a very high degree of configurability.

Karlheinz Meier is a professor of experimental physics at Heidelberg University's Kirchhoff Institute of Physics. In his role as the co-director of the European Human Brain Project, Meier leads a research group in neuromorphic computing. Funded by the European Commission, HBP is an ambitious 10-year, €1.19-billion project, with the intention of greatly advancing the understanding of the human brain using cutting-edge computer technologies. He has initiated and led two major European initiatives in the same field, but on a smaller scale — FACETS and BrainScaleS.

For detailed information on the ISC'14 program, click here

Advance registration is now open and by registering until May 15, attendees can save over 25 percent off the onsite registration rates.

About ISC'14

Now in its 29th year, ISC is the world's oldest and Europe's most important conference and networking event for the HPC community, offering a strong five-day technical program focusing on HPC technological development and its application in scientific fields as well as its adoption in an industrial environment

Over 300 hand-picked expert speakers and 170 exhibitors, consisting of leading research centers and vendors, will greet this year's attendees to ISC. A number of events complement the technical program including Tutorials, the TOP500 Announcement, Research Paper Sessions, Birds of a Feather (BoF) Sessions, the Research Poster Session, Exhibitor Forums, and Workshops

ISC'14 is open to engineers, IT specialists, systems developers, vendors, end users, scientists, researchers, students and other members of the HPC global community.

The ISC exhibition attracts decision-makers from automotive, defense, aeronautical, gas & oil, banking and other industries, as well as analysts, solution providers, data storage suppliers, distributors, hardware and software manufacturers, the media, scientists, and universities. By attending, they will to learn firsthand about new products, applications and the latest technological advances in the supercomputing industry.