

CONTACT:

Valerie Francois
Siemens Foundation
732-590-5292
valerie.francois@siemens.com

Alexander Aizenberg
Weber Shandwick
212-445-8414
aaizenberg@webershandwick.com

MATHEMATICS AND MATERIALS SCIENCE RESEARCH TAKE TOP PRIZE AT NATION'S PREMIER HIGH SCHOOL SCIENCE COMPETITION

The Last of the 2009 Siemens Competition Regional Winners Announced at the California Institute of Technology; Will Compete for \$100,000 at National Finals

Lynnelle Ye Wins Top Individual Prize; Ryan Lindeborg and Andrew James Swoboda Win Top Team Prize

PASADENA, CA, Nov. 21, 2009 — Research projects in the areas of Mathematics and Materials Science scored the highest marks this evening, as Lynnelle Ye of Palo Alto, California and the team of Ryan Lindeborg of Laguna Niguel, California and Andrew James Swoboda of Oakton, Virginia received the top honors at the Region One Finals of the 2009 Siemens Competition in Math, Science & Technology, the nation's premier high school science competition.

Tonight's winners will receive thousands of dollars in college scholarships and be invited to compete at the National Finals in New York City on December 3-7, where the winners of six regional competitions across the United States will vie for scholarships ranging from \$10,000 to the top prize of \$100,000. The Siemens Competition, a signature program of the Siemens Foundation, is administered by the College Board.

"These students have just earned their place among the nation's greatest high school scientists," said James Whaley, President of the Siemens Foundation, based in Iselin, New Jersey. "Each year, the students' work becomes more impressive, and in a record-setting year such as this one, their achievements become even more outstanding. We are proud to welcome them into our family of Siemens Scholars and look forward to their participation at the national finals in New York City."

The students presented their research this weekend to a panel of distinguished judges from the California Institute of Technology, host of the Siemens Competition Region One Finals.

Individual Winner

Lynnelle Ye, a senior at Palo Alto High School in Palo Alto, California won the individual category and a \$3,000 college scholarship for her Mathematics project in the field of game theory. Game theory is applied in fields ranging from economics to engineering to study systems where individuals compete in a shared environment. The project, titled *Chomp on Graphs and Subsets*, studied games in which two players take turns to eliminate nodes or edges of a graph. The player to remove the graph's last node wins the game. The aim of the research was to understand the best possible strategy for playing this

game and to determine which player will win from each starting graph when each plays her best possible strategy.

“Ms. Ye demonstrated a good understanding of prior research. She was able to build on tools developed by earlier researchers to solve a number of interesting open cases,” said Dr. Michelle Effros, Professor of Electrical Engineering, at the California Institute of Technology. “Even seemingly simple games like graph chomp can be strikingly difficult to analyze mathematically. Studying this type of question helps us to build tools for reasoning about strategic behavior in more complicated environments.”

Ms. Ye is the 2008 China Girls Math Olympiad gold medal winner, garnering the highest score on the USA team that year. She is also a three-time Math Olympiad Summer Program (MOSP) qualifier and two-time attendee. She has qualified for the USA Math Olympiad three times, and been named to her school’s Science Olympiad team since 2007. Ms. Ye has additionally qualified for the Research Science Institute. She has been President of her school’s Math Club since 2007, and has served as Coach for the Jane Lathrop Stanford Middle School MathCounts since 2006.

Ms. Ye’s dream job is to become a Professor of Mathematics when she completes her studies, as it is one of her top passions. She notes that her interest in the field was piqued when she somewhat accidentally qualified for her middle school’s MathCounts team in sixth grade. Ms. Ye worked on this project with her mentor Mr. Tirasan Khandhawit, a Graduate Student at the Massachusetts Institute of Technology in Cambridge, Massachusetts.

Team Winners

Ryan Lindeborg, a sophomore at Dana Hills High School in Dana Point, California, and Andrew James Swoboda, a junior at Thomas Jefferson High School for Science and Technology in Alexandria, Virginia, won the team category and will share a \$6,000 scholarship. The team’s Materials Science project, titled *Optimization of Platinum Nanoparticle Deposition on Nafion Membranes*, looked at a novel method to maximize efficient platinum catalyst loading and enhance the performance of the proton exchange membrane (PEM) fuel cell. Among other findings, the research showcased a method to decrease the use of platinum – a very expensive metal – within the PEM fuel cell by 50%, thereby making the technology more economical as well as more scientifically approachable.

“The team research was impressive because it created a pathway to a better and more efficient operation of this particular fuel cell, which is a good problem to be thinking about given the changing energy landscape,” said Dr. Julia R. Greer, Assistant Professor of Materials Science at the California Institute of Technology. “In addition to having a very clean, clearly described and well analyzed research, the teamwork here was impressive, which demonstrated a very important trait the students share with true scientific research teams to the judges.”

Mr. Lindeborg is active in the International Project Outreach Community Service Program. He has competed and won the Regional, State and National Improv Team Competition: Destination Imagination activities. He serves as the CIA Director for the Junior State of America State Cabinet, and is also the President of his school’s Amnesty International chapter. He is an active member of Habitat for Humanity, Children’s Miracle Network, Junior State of America, Family Assistance Ministries, Second Harvest Food Bank, Special Camp for Special Kids, Students Run the Los Angeles Marathon and the Friendship Shelter. Mr. Lindeborg is also Scholar Athlete with the highest GPA in his class, and also

plays the saxophone. His dream job would be to work as an Orthopedic Surgeon, where he can combine sports and medicine.

Mr. Swoboda is a member of the National Honor Society, Spanish Honor Society and was a representative for FroshComm (Student Government for entering freshmen). He was also his high school's alternate for the Hugh O'Brien Youth Leadership team. Mr. Swoboda is a member of his school's Varsity Soccer Team, the Team America Rocketry Challenge group, and is an active Club Soccer player and team Captain. His dream job is to be a Lead Design Engineer at Apple, as he has always had a keen interest in figuring out how things work and how to make them work better. He has published "*What Seniors Write at America's Best High School*," a non-profit book of college application essays written by seniors at his high school, and is currently working on the third edition.

The team's mentor for this project was Mr. Jonathan Burk, a Graduate Student in The University of California in Santa Barbara, California.

Regional Finalists

Regional Finalists each received a \$1,000 scholarship.

Regional Finalists in the individual category were:

- Alex Han, The Harker School, San Jose, CA
- David Liu, Lynbrook High School, San Jose, CA
- Tito Thomas, Troy High School, Fullerton, CA
- William Zhang, La Jolla High School, La Jolla, CA

Regional Finalists in the team category were:

- Cassandra Buru and Jian Liu, Northview High School, Johns Creek, GA
- William Han and Frank Zhao, Westview High School, Portland, OR
- Samantha Piszkiwicz and Nicolai Doreng-Stearns, Laguna Beach High School, Laguna Beach, CA
- Katherine Wang and Sreetha Sidharthan, Interlake High School, Bellevue, WA

The Siemens Competition

The Siemens Competition was launched in 1998 to recognize America's best and brightest math and science students. In another record-setting year, 2,151 students registered to enter the Siemens Competition in Math, Science and Technology in 2009 – more than ever before - for a total of 1,348 project submissions – a 14% increase in project submissions over 2008 figures and more than a 12% increase in the number of registrations.

Entries are judged at the regional level by esteemed scientists at six leading research universities which host the regional competitions: California Institute of Technology; Carnegie Mellon University; Georgia Institute of Technology; Massachusetts Institute of Technology; University of Notre Dame; and The University of Texas at Austin.

Winners of the regional events are invited to compete at the National Finals at New York University in New York City, December 3 – December 7, 2009. Visit www.siemens-foundation.org on December 7, 2009 at 9:30 am EST to view a live webcast of the National Finalist Award Presentation. You can also

log into and follow the Siemens Foundation on Twitter (<http://twitter.com/SFoundation>) for the latest information and announcements throughout this year's competition.

About the Siemens Foundation

The Siemens Foundation provides more than \$7 million annually in support of educational initiatives in the areas of science, technology, engineering and math in the United States. Its signature programs, the Siemens Competition in Math, Science & Technology and Siemens Awards for Advanced Placement, reward exceptional achievement in science, math and technology. The newest program, The Siemens We Can Change the World Challenge, encourages K-12 students to develop innovative green solutions for environmental issues. By supporting outstanding students today, and recognizing the teachers and schools that inspire their excellence, the Foundation helps nurture tomorrow's scientists and engineers. The Foundation's mission is based on the culture of innovation, research and educational support that is the hallmark of Siemens' U.S. companies and its parent company, Siemens AG.

For further information, visit www.siemens-foundation.org.

The College Board

The College Board is a not-for-profit membership association whose mission is to connect students to college success and opportunity. Founded in 1900, the College Board is composed of more than 5,700 schools, colleges, universities and other educational organizations. Each year, the College Board serves seven million students and their parents, 23,000 high schools, and 3,800 colleges through major programs and services in college readiness, college admission, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT[®], the PSAT/NMSQT[®] and the Advanced Placement Program[®] (AP[®]). The College Board is committed to the principles of excellence and equity, and that commitment is embodied in all of its programs, services, activities and concerns.

For further information, visit www.collegeboard.com.

NOTE TO EDITORS: B-roll and photos of winners available on request.

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