



**Davidson Fellow
Darren Zhu**

(\$10,000 Scholarship Recipient)



Personal Info

Age: 17

Winston-Salem, North Carolina

School, College and Career Plans

A graduate of the North Carolina School of Science and Mathematics, Darren will attend Yale University this fall. Although he has not yet committed to a major, his current plans are to continue developing his interests in science, and he envisions a major in chemistry or chemical engineering.

Davidson Fellows Submission (Science)

In his project, "Synthesis & Characterization of Self-Assembled Monolayers of Isocyanides on Ferromagnetic

Thin Films," Darren worked to develop more efficient data storage technologies by exploring nanofabrication methods for spintronics. Spintronics, or spin-based electronics, are inherently more powerful than electronics, as they exploit electron spin and subsequently are more sensitive than integrated circuit technology. He incorporated molecular self-assembled monolayers (SAMs) into spintronics and performed surface analyses to find that isocyanide-based SAMs are a viable candidate for implementation in nanoscale spintronics fabrication. Darren's work has strong applications in nanotechnology, specifically in the field of nanolithography.

Biography

Born in Canada, Darren's family moved often when he was in elementary school. Darren was accelerated to fifth grade from third and attended a magnet school in Winston-Salem, North Carolina that had a "highly academically gifted" program.

At the end of seventh grade, Darren was accepted to the North Carolina School of the Arts high school program to study piano, despite being only 11 years old. However, he lacked a challenging academic experience and after two years at the local high school, Darren entered the North Carolina School of Science and Mathematics. There, he was given opportunities to excel including research resources and unique course selections.

Darren has many other interests, including a love for sports, he plays varsity tennis, as well as basketball, soccer, ultimate Frisbee and ping pong. Darren enjoys promoting cultural awareness and was the president of the Asian Cultures Club at his high school, and served as a residential life assistant for his high school dormitory. Darren also speaks Chinese and French.

Please see next page.



Davidson Fellow
Darren Zhu
(Cont.)

Honors/Awards

- 2009 Davidson Fellow
- 2009 Robert C. Byrd Scholarship Recipient
- 2009 National Merit Finalist, Scholarship Winner
- 2009 Nano-Engineered SpintroniX Technology (NEXT), Exploravision Honorable Mention
- 2009 Artificial Photosynthetic Energy CompleX (APEX), Conrad Prize Finalist
- 2009 North Carolina International Science Challenge, Finalist
- 2008 Siemens Competition, National Semifinalist
- 2008 National Advanced Placement Scholar
- 2008 Science Olympiad National Tournament, 8th place in Five Star Science Event
- 2008 "Implementation of Quantum Dots in Photovoltaic Cells," Toshiba/NSTA Exploravision Awards competition, Honorable Mention
- 2008 American Invitational Mathematics Examination and North Carolina State Math Contest qualifier

Community Activities

Darren completed a summer service project by playing piano at many retirement homes in Winston-Salem. He has also served as the rehearsal pianist for many high school theater and musical productions, as well as the school chorus piano accompanist. Darren has also taught basic science lessons to underprivileged children.

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