



**Davidson Fellow
William Yuan**

(\$25,000 Scholarship Recipient)



Personal Info

William Yuan
Age: 12
Portland, Oregon

School, College and Career Plans

William is a rising seventh grader in Meadow Park Middle School's Summa Program, in Beaverton, Oregon. Wanting to explore and gain experience before deciding on a major, William plans to continue his research in renewable energy and eventually select a major for his college study towards a Ph.D. degree.

Davidson Fellows Submission (Science)

In his project, "A Highly-Efficient 3-Dimensional Nanotube Solar Cell for Visible and UV Light," William invented a novel solar panel that enables light absorption from visible to ultraviolet light. He designed carbon nanotubes to overcome the barriers of electron movement, doubling the light-electricity conversion efficiency. William also developed a model for solar towers and a computer program to simulate and optimize the tower parameters. His optimized design provides 500 times more light absorption than commercially-available solar cells and nine times more than the cutting-edge, three-dimensional solar cell.

Biography

Since 2005, William has been involved in the First Lego League (FLL), which led him to research renewable energy and nanotechnology. During his research and community outreach, William realized the importance of renewable energy for future generations and began to focus his research on solar cells. William regularly visited Portland State University (PSU) as part of this research.

William graduated from Jacob Wismer Elementary School in 2007 and enrolled in Meadow Park Middle School's Summa program. Always ranked within the top 1 percent on state standardized tests, William has taken advanced classes in mechanical engineering, biology, computer programming and media design outside school.

William has many interests and is involved in FLL, MESA (Math, Engineering, and Science Achievement), Science Bowl, Mathcounts, American Mathematics Competitions (AMC), Chess, Signal to Noise, Geo-Bee, and the Discovery Education Young Scientist Challenge. William enjoys learning about science and technology because he believes these areas hold the keys to the future.

Outside school, William plays piano, chess, and has a Poom Belt certificate (black belt for those under 15) in Taekwondo. He also enjoys traveling and skiing.

Please see next page.



Davidson Fellow
William Yuan
(Cont.)

Honors/Awards

- 2008 Davidson Fellow
- 2008 Northwest Science Expo, Second Place
- 2008 Institute of Electrical and Electronics Engineers, Best Engineering Project
- 2008 Johns Hopkins Center for Talented Youth Talent Search, First Place in Oregon State (Verbal)
- 2008 Johns Hopkins Center for Talented Youth Talent Search, First Place in Oregon State (Quantitative)
- 2008 High Tech Kids First Lego League First Lego League (FLL) International Open (team), Second Place Champion's Award
- 2008 Oregon Chess for Success State Tournament, Team Championship, First Place
- 2008 Oregon Chess for Success State Tournament, Second Place
- 2007 Johns Hopkins Center for Talented Youth Talent Search, First Place in Oregon State
- 2007 Intel Oregon FLL Champion's Award (team), First Place
- 2007 Oregon Chess for Success State Tournament, Team Championship, First Place
- 2007 Oregon Chess for Success State Tournament, Second Place
- 2007 World Taekwondo Headquarters: Poom Certificate
- 2006 Intel Oregon FLL State Tournament Young Team, First Place
- 2006 Oregon Chess for Success State Tournament, Team Championship, First Place
- 2005 Intel Oregon FLL Regional Tournament (team), First Place Award
- 2005 Oregon Chess for Success State Tournament (team), Second Place

Community Activities

William tutors students at his neighborhood elementary school in mathematics and writing. A member of his school's Science Bowl, Chess, MESA, AMC and FLL Robotic teams, he often shares and presents his research results to the public at the Oregon Museum of Science and Industry (OMSI).

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The Davidson Institute for Talent Development

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