



**Davidson Fellow
Nora Xu**

(\$10,000 Scholarship Recipient)



Personal Info

Nora Xu
Age: 17
Naperville, Illinois

School, College and Career Plans

Nora is a recent graduate of the Illinois Mathematics and Science Academy and will attend Princeton University where she plans to major in Physics or Mathematics. Nora hopes to become a biomedical researcher.

Davidson Fellows Submission (*Science*)

In her project, "Modeling of X-Ray Scattering for Nanocrystal Superlattice Multilayer Thin Films," Nora developed a unique method of determining the crystal structure of nanocrystalline superlattice (NCS) thin films. Nora proposed treating the NCS multilayer thin films as a set of two-dimensional lattice points with each basis in three-dimensional space. Using this model, Nora confirmed x-ray scattering pattern intensities which can be applied to molecules and atoms. Nora's research has potential in optical and electron microscopes, as a delivery system for biomolecules, and as a vector for drug delivery to cancerous tumors.

Biography

Nora has always been enrolled in academically gifted programs, thoroughly enjoying the most challenging courses. The initial difficulty of her project made a fascinating intellectual challenge but she delighted in the pursuit leading her to an optimistic attitude towards research.

Nora encountered many challenges during the course of her project. Though she had completed a calculus based physics class as well as modern physics class, she lacked experience in the field of solid state physics. Nora worked problems, read many books and papers, and questioned her math teachers when she came upon mathematical principles she was unfamiliar with. Ultimately and with the support of family and teachers, Nora taught herself the complexities of solid state physics and jumped into the field.

Nora is deeply committed to teaching and leading younger individuals who are interested in science, mathematics and physics. Nora was also a writer and copy editor of her high school's math and science magazine and played on the varsity tennis team.

Please see next page.



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(Cont.)

Honors/Awards

- 2007 Davidson Fellow
- 2007 Chicago Tribune All-Academic Team Finalist
- 2007 Intel Science Talent Search Finalist
- 2007 Illinois State Scholar
- 2006 National Merit Finalist
- 2006 Siemens Advanced Placement Winner
- 2005-present American Regions Math League
- 2004-present Mu Alpha Theta
- 2004-present Science Olympiad Team
- 2004-present Future Problem Solving Bowl
- 2003 American Museum of Natural History Young Naturalist Awards Semi-Finalist

Community Activities

This summer Nora is working for the Dober Group as an Applications Chemist. She volunteers for the Illinois Mathematics and Science Academy Campus Work Service and is a peer tutor and grader for the Mathematics Office. Nora was a volunteer teacher and group leader at IMSA Kids Institute Math Explorers and Science Explorers Camps. She has volunteered for the Edward Hines VA Hospital in the Cardiac Care and Radiation Oncology Units.

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