



Davidson Fellow
Roman Stolyarov

(\$25,000 Scholarship Recipient)



Personal Info

Age: 17
Addison, Texas

School, College and Career Plans

A rising senior at R.L. Turner High School, Roman plans to earn an undergraduate degree in biochemistry at a local university. Following this, he plans to study for an M.D. and pursue a career in cardiothoracic or neurosurgery.

Davidson Fellows Submission (*Science*)

In his project, "Fabrication and Characterization of an All-Glass Visible Omnidirectional Dielectric Mirror," Roman designed and produced an omnidirectional dielectric mirror for visible light using a unique one-step fabrication process.

The mirror is composed of 12 ultrathin (<100nm) alternating layers of two chalcogenide glasses, which were deposited by thermal evaporation onto a transparent silicon dioxide glass substrate. Simulations show that doubling the number of alternating layers would produce near perfect reflectivity, a phenomenon impossible for silvered mirrors, given their inherent losses in the visible spectrum. Roman's fabrication process will allow for rapid manufacturing of wavelength specific mirrors with wide applications in radar filtration and fiber technologies.

Biography

Born in Dallas to engineer parents who emigrated from the Soviet Union, Roman grew up in a home filled with mathematics and science. From seventh through 10th grade, Roman attended Harmony Science Academy, a college preparatory charter school in the Dallas area with a strong emphasis on mathematics and science. He was able to take a variety of science classes, such as AP Biology and AP Chemistry, early in high school.

Currently, Roman is a member of his school's Academy of Biomedical Professions, which allows him to take courses in anatomy and health science technology, giving him an introduction to the field of medicine. Roman will take an Emergency Medical Technician (EMT) course next year and become a nationally-certified EMT.

Roman has participated in a variety of extracurricular activities including MathCounts, the school science fair and the Dallas Regional Science and Engineering Fair. His other interests include traveling, sailing, cycling, jogging, and skiing. He also spends his time tutoring peers, college students, and younger children in math.

Please see next page.



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(Cont.)

Honors/Awards

- 2009 Davidson Fellow
- 2009 National Honor Society
- 2009 Mathematics Honor Society
- 2009 National Spanish Honor Society
- 2007 Dallas Regional Science and Engineering Fair, First Place in Physics
- 2006 Harmony School Science Fair, First Place Overall
- 2005 Dallas Regional Science and Engineering Fair, Grand Prize
- 2005 Harmony School Science Fair, First Place in Physics
- 2004 Harmony School Science Fair, Second Place Overall
- 2005 MathCounts, First Place among individual competitors and 18th place overall at state; Second Place overall at the citywide competition
- 2004 MathCounts, Third Place overall at the citywide competition

Community Activities

Roman coaches a local middle school math team for MathCounts competitions and tutors young students in basic math skills. He also volunteers at local blood drives and fundraising efforts aimed at fighting the spread of malaria.

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