



**NASA ACADEMY AT MARSHALL
SPACE FLIGHT CENTER**

**PROFILE BOOK
2005**



Michael Griffin, NASA Administrator

"This is NASA's vision for the future. Our mandate is:

- To improve life here,
- To extend life to there,
- To find life beyond

So, how do we get to that impressive picture of the future? Part of the answer is by executing NASA's mission:

- ***To understand and protect our home planet***
- ***To explore the Universe and search for life***
- ***To inspire the next generation of explorers ... as only NASA can."***



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Program Description

The NASA Academy is an intensive resident summer program of higher learning for college undergraduate and graduate students interested in pursuing professional and leadership careers in space-related fields.

The NASA Academy program is designed to present a comprehensive package of information and experiences about the organization of the NASA agency, some of its most important current and planned science, engineering, education, and technology enterprises, as well as a number of non-technical areas of critical significance, such as management, budgeting, safety, personnel and career development, leadership, space law, international cooperation, etc. Besides attending lectures and workshops, students are involved in supervised research in MSFC laboratories, and participate in visits to other NASA Centers and facilities and a number of space-related academic laboratories and industries.



Eligibility, Selection Criteria, and Placement

The 12 participants in the 2005 NASA Marshall Academy have been selected from a pool of 742 financially supported applicants representing 250 institutions in 41 states in the continental USA and Puerto Rico. Selection was based following criteria:

- academic rank (junior, senior, first, or second year graduate)
- academic performance (GPA higher than 3.0 or equivalent)
- demonstrated interest in the space program
- demonstrated leadership qualities
- research and/or project interest and experience
- maturity
- recommendation and references
- citizenship or permanent residence is required for US applicants

Both the selection process and placement of the Academy participants in Marshall's research groups were assisted by recommendations from faculty, administrators, academic supervisors, and co-workers, and the applicants' self-profiling essays.

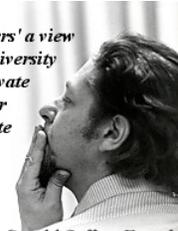


A Brief History of the NASA Academy

The NASA Academy was founded in 1993 (as the "NASA Space Academy") at the Goddard Space Flight Center by Gerald (Jerry) Soffen, former Mars Viking project scientist, architect of the NASA Astrobiology program, and first Director of the Goddard Office of

University Programs. Jerry was an accomplished scientist and a dedicated educator. He took advantage of the unusual opportunities presented to him during his career and realized the importance of mentoring in the life of young professionals. In his vision, the Academy was intended to exceed in purpose and content all the other regular internships by familiarizing its participants with as many facets of the NASA agency as possible. With his dynamic personality and unique leadership, he opened many gateways and defined a new standard of excellence.

"To give possible 'leaders' a view into how NASA, the university community, and the private sector function, set their priorities, and contribute to the success of the aerospace program."



*Gerald Soffen, Founder
(1926-2000)*

As the reputation of the Goddard Academy widened, new NASA Academy Programs were started at the Marshall Space Flight Center (1994), the Ames Research Center (1997), and the Dryden Flight Research Center (1997). In 2005 Goddard, Glenn, and Marshall will host their own Academy.

The name of the program changed from "NASA Space Academy" to "NASA Academy" at specific NASA Centers. A continuous effort is being made to establish or re-establish Academies at various NASA Centers, with different profiles and focus areas.

Jerry Soffen died on November 22, 2000. We honor his legacy by continuing the Academy program that he loved so well.

In 2002, the NASA Academy celebrated ten years of successful activity. So far, 415 participants have graduated from the program, both domestic and international students.



University of Kentucky

Lexington, Kentucky
Chemical Engineering
PhD Candidate 2007



NASA Academy Research Project:

"Viability of a using a Monolith Adsorbent Formation for CO₂ Removal"

Principal Investigator: Jim Knox

Academic and Research Experience

- **University of Kentucky, Lexington, KY, June 2003 - Present**
Protein immobilization on polymer surfaces to create a hemocompatible surface for use with biosensors and implants.
- **Vanderbilt University, Nashville, TN, January 2003- May 2003**
Ion exchange of zeolites followed by carbon dioxide adsorption in a controlled environment.

Work Experience

- **Vanderbilt Housing and Residential Affairs, Nashville, TN, August 2001 – May 2002**
Monitored the daily activities of over 100 residents. Assisted residents in college related venues.

Memberships and Activities

- AIChE, Member, August 2001 – Present
- University of Kentucky Chemical and Materials Engineering Graduate Student Association, President, January 2004 - Present
- Church Youth Group, Leader, August 2004 – Present
- Richmond Area Softball League, Member, May 2003 – Present

Skills and Certifications

- Computer Skills: Aspen, Mathematica, Excel, Kaleidagraph, Polymath

Honors and Awards

- Dean's List: 1999-2003

Hobbies and Interests

Softball, Church Youth Group, Harley-Davidson Motorcycles, Leo (my Bichon puppy), Home Improvement Ventures

Personal Statement

In 1995 I moved from Northern California to Central Kentucky. California held my family, my friends, and my very identity. The culture shock of moving from rural California to rural Kentucky is indescribable. For the first three months, I understood only about a quarter of what was said to me. I longed for home and friends who spoke an English dialect that I could understand. In addition, I found that the combination of a Hispanic father and white mother was not an accepted norm in Kentucky. This cultural separation led to not only a smaller, though more select, group of friends, but also an inward reflection of myself and my goals at the beginning of my high school career. It was during this time that I laid out the plans for my future. Many experiences in my life have shaped who I am. However, I have an appreciation for hard work and a drive to succeed that began as the loneliness of a teenager. From the time I was fifteen I have known that one day I would do work with and for NASA. I am very serious about my job, although I enjoy it tremendously. I look forward to meeting and working with some the greatest scientists of our day and of the future.



Kamara Elizabeth Brown

The George Washington University

Washington, DC
Electrical Engineering and Mathematics
Bachelor and Masters of Science, May 2006



NASA Academy Research Project:

“An Assessment of Artificial Intelligence Technologies for Vehicle Management Systems”
Principal Investigator: Mike Watson

Academic and Research Experience

- **NASA Glenn Research Center, Space Communication Office, Engineer Intern, Cleveland, Ohio, Jun – Aug 1998**
Calculated and analyzed signal level strengths received by a ground station from the Advanced Communications Technology Satellite (ACTS) during rainy durations; this supported earlier works in testing and evaluating adaptive rain fade compensation protocol for a communication satellite system operating from Ka-Band.

Work Experience

- **Lockheed Martin Corporation / NASA Glenn Research Center (GRC) – ACTS Mission Engineering Team, Satellite System Engineer Associate, Cleveland, Ohio, Jan 2001 - Sept 2004**
Provided satellite communication engineering and technical advice on the health, status, and command and control for the ACTS spacecraft; Involved in mission planning with NASA Engineers and experimenters.
- **NASA GRC / Lockheed Martin Corporation - Space Communication Office (SCP) / ACTS Mission, Technical Consultant, Cleveland, Ohio Jun 1999 –Dec 2000**
On-call engineering support when RF and TT&C system problems and spacecraft anomalies occurred.
- **NASA GRC - Engineering Design & Analysis Division / SCP Office, Engineer Intern, Cleveland, Ohio, Aug 1997 – Jun 1999**
Installed and configured Microsoft Windows NT Servers and Workstations; Trainer for employees in engineering and business applications; Responsible in generating technical and general-public interest for the ACTS Mission and SCP office.

Memberships and Activities

- American Institute of Aeronautics and Astronautics, Member
Jan 2003 – Present
- Institute Of Electrical And Electronics Engineers, Inc., Member,
Jan 2003 – Present
- Society of Satellite Professionals International, Member,
Jan 2002 – Present
- Toastmasters International, Member, August 2001 - Present

Skills and Certifications

- Computer Skills include: AutoCAD, MathCAD, MatLAB, PSPICE, Satellite Tool Kit, C++, HP VEE, Visual Basic 6.0, HTML, FORTRAN, Windows NT and 2000 Platforms.
- Foreign Language Skills: Mid-Level Training in Japanese
- Certification: Train the Trainer Certification

Honors and Awards

- Presidential Scholarship Recipient 2002- 2004
- Dean's List 2002 - 2004
- LAN and Technical Support Awards for Excellence, NASA GRC Engineering Design and Analysis Division 1998,1999

Hobbies and Interests

GPS Systems, Wireless Networks, Digital Signal Processing, Public Policy & Foreign Affairs, Teaching, Racquetball, Mystery novels, Watching the Cartoon Network Channel.

Personal Statement

My wise high school advance calculus teacher taught me to first ground myself in mathematics and logic. I surrounded myself with many professional memberships and opportunities since then, navigating me towards R&D organizations that emphasize communication engineering activities. I see myself as a vocal and untiring advocate of both the romantic and popular sides of space communication systems. There is no such thing as too much education or too much learning. Research is a part of study and learning; learning and study are a big part of all research. Those who use their education most effectively will be most successful in the future world of science. I plan to enter graduate school to obtain a doctorate in Communication Engineering shortly after completing my degrees. Ultimately, I see myself working at NASA as a researching scientist while inspiring the next generation of problem solvers.



University of Wisconsin-Madison

Madison, Wisconsin
Materials Science and Engineering
Bachelor of Science, December 2006



NASA Academy Research Project:

*"High Tensile Strength Amalgams for In-Space
Fabrication and Repair"*

Principal Investigator: Richard Grugel

Academic and Research Experience

- ***Perepezko Research Lab; UW-Madison, Summer 2004:***
Worked in the Nucleus research lab, which focuses on the properties during solidification of various materials for use in various industries. Extensively used scanning electron microscope, x-ray diffraction, and differential thermal analysis to identify crystallographic changes in various alloys.

Work Experience

- ***Computer-Aided Engineering; UW-Madison, Nov. 2003-Present:***
Provided tech support for students using computers on the college of engineering campus. Focusing on hardware troubleshooting, software applications, network interface tools, Windows, and UNIX support.

Memberships and Activities

- Vice President AFS- Madison Student Chapter, 2005
- Member ASM, TMS, and ACS, 2004-2005
- Member of the National Honor Society
- SOAR (New Student Orientation) MSE Presenter, Summer 2004
- Melt-spinning/Rapid Solidification Student Group Exhibit, UW Engineering Expo, Spring 2005

Skills and Certifications

- Completed Cisco Networking Academy
- Proficient in HTML, and webpage design.

- Lab Equipment Used: Scanning Electron Microscope, X-Ray Diffraction Machine, Tensile Tester, Rockwell Macrohardness Tester, Vickers Microhardness Tester, Profilometer, various Sputtering and Furnace systems.

Honors and Awards

- Deans' List, spring 2003, spring 2004, fall 2004, spring 2005.
- High Honors, all eight semesters of high school.
- Recipient of the Harry M. Clarke scholarship.

Hobbies and Interests

Golf, snowboarding, intramural basketball, going to Wisconsin basketball/football games, website design, and my iPod.

Personal Statement

I just finished my third year at Wisconsin with another three semesters to go. The Academy is going to be a great learning experience, and I can't wait to apply what I've learned over the past three years towards real world applications. I can't think of a more exciting application of materials science than the ongoing exploration of space and the work going on at NASA, and I am very grateful to be a part of it.



University of North Dakota

Grand Forks, North Dakota
Mechanical Engineering
Bachelor of Science, May 2005



NASA Academy Research Project:

“Autonomous Assembly of Modular Space Structures”

Principal Investigator: Dean Alhorn

Academic and Research Experience

- **University of North Dakota, Grand Forks, ND, 8/00-5/05**
Senior Design: Designed a reusable cart for the military to launch the MQM-107 Aerial Target.

Work Experience

- **Goodrich, Burnsville, MN, 5/04 to 8/04**
Designed a new circuit card for the Air Data Smart Probe using ProEngineer. Redesigning the manifold and the mounting studs to correspond with the new circuit card.
- **Goodrich, Jamestown, ND, 1/03 to 7/03**
Design Engineer: Modeled F15 parts using Unigraphics
Manufacturing Engineer: Drafted parts and ensured efficient flow of Manufacturing Orders
Quality Assurance Engineer: Analyzed supplier data using Excel and approved Revision Log Sheets

Memberships and Activities

- American Institute of Aeronautics and Astronautics, President, 10/03 to 5/04
- Tau Beta Pi, 3/03 to Present
- UND Women’s Rugby Team, 8/02 to 5/03
- Intramural Broom Ball, 8/02 to 5/05
- American Society of Mechanical Engineers, 1/02 to Present
- National Society of Collegiate Scholars, 9/01 to Present
- Society of Women Engineers, 9/00 to Present, President 6/04 to 5/05, Fundraising Chair 1/04 to 5/04, Outreach Chair 9/01 to 5/02

Skills and Certifications

- Computer Skills:
 - Engineering Programs: ProEngineer, Intralink, Unigraphics, ANSYS

- Programming Languages: Fortran
- Mathematics Programs: Mathematica, MathCAD
- Windows (95-XP), Unix, MS Office
- Certification:
 - Private Pilots' License

Honors and Awards

- American Association of University Women's Award, 2005
- Joyce Medalen Award, 2002, 2004
- NSF Math, Science, and Engineering Scholarship, 2002, 2004
- Second Place ASME Old Guard Poster Competition, 2004
- Pearl I Young Scholarship, 2004
- Who's Who Among Students in American Universities and Colleges Award, 2003, 2004
- Memorial Union Leadership Recognition Award, 2002
- Dean's List, 2001, 2002, 2003, 2004
- President's Honor Roll, 2000
- Girl Scouts: Gold Award, Silver Award

Hobbies and Interests

Biking, billiards, broomball, dancing, flying, rugby, snowmobiling, soccer, and space exploration

Personal Statement

I grew up in Lexington, Minnesota, and I am the youngest of four children. My father is a carpenter, and he taught me that hard work and determination is what a person needs in life to materialize dreams. I firmly believe that nothing is worth doing unless you do it with all your heart. In my heart working in the field of aerospace sciences has always been a life long goal. I know that I can accomplish anything I want as long as I am willing to work for it. Throughout my childhood, I was active in Girl Scouts, soccer, band, and several student organizations all of which taught me the importance of teamwork, leadership and the vitality of relationships in life. My passion for space goes beyond just a bewilderment of the night sky to a yearning to make it a part of the rest of my life, my career. I took the first step towards my dream by pursuing a degree in Mechanical Engineering with an Aerospace Concentration at the University of North Dakota.



University of Kansas

Lawrence, Kansas
Aerospace Engineering
Bachelor of Science, 2007



NASA Academy Research Project:

“Development of Improved Damage Tolerance Capabilities of the Core/Facesheet Bond in Composite Honeycomb Sandwich Structures”

Principal Investigator: Alan Nettles

Academic and Research Experience

- **University of Kansas School of Engineering Department of Aerospace Engineering, Lawrence, Kansas, Fall 2004**
I completed research of Venus Wind profiles for Dr. Trevor Sorenson, Professor of Aerospace Engineering.

Work Experience

- **First Step House, Lawrence, Kansas, 2002-2003**
I provided childcare for women recovering from substance and alcohol abuse. This was both an emotionally draining and fulfilling experience where I got to work with kids who were dealing with difficult circumstances.
- **Friends of the Library Booktique, Topeka and Shawnee County Public Library, Topeka, Kansas, 1998 – 2002**
This experience nurtured my love of the library and books. I was very lucky to have a high school job where the topics of discussion ranged from art, literature, and music to history, politics, and science. I worked with professionals from all types of backgrounds who were volunteering their time.

Memberships and Activities

- KU satellite project, Antenna team, Nov 2002- April 2003
- Delta Force, Member, Aug 2002 – Present
- Douthart Scholarship Hall, Resident, Jan 2003- Present
- American Astronautical Society, Treasurer, Outreach Chair, Sept 2004 – Present
- Latin American Solidarity, Treasurer, Aug 2004 – Present
- Society of Women Engineers, Fundraising Chair and Activities and Mentoring Chair, Aug 2004 – Present

- KU – El Salvador Sister Cities Delegation – Sistering Committee representative, Oct 2004 - Present
- Golden Key Honor Society, Member 2004
- KU Western Civilization Study Abroad Program, Participant, Spring 2004.

Skills and Certifications

- Computer Skills: FORTRAN, C++, Unigraphics, AeroCADD, Patran, LabVIEW
- Spanish Language

Honors and Awards

- University Scholars Finalist 2003
- Wallace Galluzzi Volunteer of the Year Award Nomination 2004
- Arthur and Helen-May Johnson Scholarship; School of Engineering scholarship 2002- Present
- Joel D Grantham Scholarship; Department scholarship

Hobbies and Interests

Latin American culture, global and local politics, theatre, astronomy

Personal Statement

I am very excited to be participating in the NASA Academy at Marshall Space Flight Center. The summer of 2005 will, no doubt, be memorable and educational; working with the great professionals at MSFC will give me knowledge and experience that I can apply to the rest of my education and eventually my career. I am thankful for this opportunity



University of Wyoming

Laramie, Wyoming
Astrophysics
Bachelor of Science, 2005



NASA Academy Research Project:

*“Construction of a Swift Data Archive and
Development and Implementation of Swift
Gamma Ray Burst Analysis Tools”*

Principal Investigator: Sandy Patel

Academic and Research Experience

- **College of Southern Idaho, Twin Falls, Idaho 2000-2002:**
Associate of Science – Physics
- **University of Wyoming, Laramie, Wyoming 2002-2005:**
Bachelor of Science – Astrophysics

Work Experience

- **College of Southern Idaho, Twin Falls, Idaho 2000-2002:**
Planetarium Assistant – Introduced regular planetarium shows utilizing “Digistar” technology; Assisted with production of locally produced shows; Operated telescopes at monthly “star parties”.
- **University of Wyoming, Laramie, Wyoming 2002-2005**
Planetarium Assistant – presented regular planetarium shows. Served as Interim Director – Jan-May 2005, responsible for all planetarium shows and operations

Memberships and Activities

- Phi Theta Kappa (National Scholastic Honorary)
- Magic Valley Symphony
- National Society for Collegiate Scholars (National Scholastic Honorary)
- Sigma Pi Sigma (Society for Physics Students)
- University of Wyoming Symphony
- Pi Beta Phi Sorority
- Magic Valley Astronomical Society

Skills and Certifications

- Computer Skills: Super mongo, UNIX, MAXIM DL, LINUX, IRAF, MATLAB
- 4th Degree Black Belt – Tae Kwon Do (2003 National Champion)
- CPR and First Aid Certifications

Honors and Awards

- Dean's List 2000- 2005
- Honors Convocation –School of Arts and Sciences – U. of Wyoming
- Congressional Intern – U.S. House of Representatives 2001

Hobbies and Interests

Stargazing, piano, violin, TaeKwonDo, Judo, dance

Personal Statement

"It really does have rings!", I exclaimed when I first viewed the planet Saturn through one of the Hansen Planetarium's telescopes. From the early age of eight, I began a "love affair" with astronomy, and a life-long quest to observe and to better understand the heavens.

It has been my dream to one day work for NASA or at a research grade observatory, and I feel fortunate, indeed, to have been selected as part of this year's program! I bring to the Academy knowledge of the nighttime sky, familiarity with various types and sizes of telescopes and their operation, several years of experience working in public planetariums and observatories, and a sincere desire to learn!



University of Houston

Houston, Texas
Space Architecture
Master of Science, 2006



NASA Academy Research Project:

*"Miniaturization of a Scanning Electron
Microscope for Martian Astrobiological Studies"*

Principal Investigator: Brian Ramsey

Academic and Research Experience

- **University of Houston, Houston, TX, 8/04 - present:**
Currently pursuing an MS in Space Architecture at SICSA (Sasakawa International Center for Space Architecture). Developing "big picture" designs for space missions, including human lunar and Martian landings.
- **Gustavus Adolphus College, St. Peter, MN, 9/86 - 5/90:**
Earned a bachelor's degree in physics. Researched pressure-related blood gas disorders, and investigated triboluminescence in wintergreen Lifesavers.

Work Experience

- **Merchant & Gould, Minneapolis, MN, 11/99-7/04:**
Patent agent: wrote, researched, filed, and prosecuted patents for inventions in a range of technologies.
- **Detector Electronics Corp., Bloomington, MN, 8/98 - 9/99:**
Certified smoke, gas, and fire sensors for hazardous locations.
- **PAMI, Edina, MN, 10/94 - 7/98:**
Product engineer: produced inflatables, MLI blankets, and laminates for spaceflight, including solar collector circuitry for the International Space Station.
- **Sheldahl, Inc, St. Peter, MN, 9/91 - 9/94:**
QA engineer. Qualified and tested materials and laminated products for air and space applications.
- **Sheldahl, Inc, St. Peter, MN, 8/90 - 9/91:**
Laboratory technician: tested optical, mechanical, and electrical properties of thin and thick films and laminates.

Memberships and Activities

- American Institute of Aeronautics and Astronautics
- Planetary Society

Skills and Certifications

- Patent Agent registered to practice before the U.S. Patent and Trademark Office
- Computer Skills: AutoCAD
- basic reading skill in German

Honors and Awards

- National Merit Scholar 1986-1990
- Partners in Scholarship Scholar 1986-1990

Hobbies and Interests

- I collect hobbies. I have hands-on experience (to various degrees) in throwing pottery, silverworking, glassworking, woodworking, home-brewing, theatrical makeup, stage combat, and bookbinding.
- I make ice cream with liquid nitrogen.
- Anti-hobby: I am an appallingly bad photographer.

Personal Statement

I believe that the universe is the best toy around. I believe that humanity's destiny is either in the stars or six feet under the Earth, and that it's up to humanity to choose. I believe that the human race needs a frontier to be happy, healthy, and free, that space exploration is as good a frontier as any and a better one than most, and that a frontier of dreams will do if a frontier of homesteads isn't available at the moment. I believe that the universe can be known and understood, that it can be a good and even a noble thing to try, that knowledge and understanding are always provisional, and that anyone who tells you they know The Absolute Truth (TM) should be watched very, very carefully. I believe in self-medicating with dear friends and really good ice cream.

I believe that you don't have to stay anywhere forever. I believe that the important things are very simple, and the simple things are very hard. I believe that someone with no sense of humor probably has no understanding of serious things, either. I believe in passion, compassion, imagination, intuition, daydreams, hardheadedness, doubt, making decisions based on hard data, that all decisions are made with insufficient data and that everyone should know how to make at least one thing with their own hands.



University of Idaho

Moscow, Idaho
Physics
Bachelor of Science, May 2006



NASA Academy Research Project:

“Tests of High Temperature Electronic Materials for long-Duration Space Exploration”

Principal Investigator: Ching Hua Su

Academic and Research Experience

- **University of Idaho, Physics Department, Moscow, ID, June 8 - August 9 2003:**
Undergraduate Research Assistant in Berven's Lab working on modeling single electron transport in tunnel junction arrays.
- **University of Idaho, Microbiology Department, Moscow, ID, Feb. 10 2002 – May 2003:**
Undergraduate Research Assistant in Hartzell's Lab working with extremophile *Archaeoglobus fulgidus*
- **University of Idaho, Chemistry Department, Moscow, ID, Jan 22 – May 3 2002:**
Undergraduate Research Assistant in Chang's Lab working on antioxidant properties of flavonoids.

Memberships and Activities

- UI Honors Program, Member, Aug 2001 - Present
- UI Horsemen's Club, Member, Aug 2001 – Present
- National Society of Collegiate Scholars, Member, March 2002-Present
- Phi Eta Sigma National Freshman Honor Society, Member, March 2002 – Present
- Society of Physics Students, Member, Aug 2003 - Present
- Air Force ROTC, January 2003 - Present
- Arnold Air Society, Member, January 2004 - Present

Skills and Certifications

- Technician License in Amateur Radio

Honors and Awards

- Dean's List 2001, 2002, 2003, 2004
- UI Presidential Scholarship Aug 2001 – May 2002
- UI Scholars Scholarship Aug 2001 – May 2005
- UI Physics Leonard Halland Centennial Scholarship Aug 2003 – May 2006
- AFROTC Scholarship Aug 2004 – May 2006

Hobbies and Interests

Painting, Drawing, Classical Guitar, Horseback Riding, Beekeeping, Rock Collecting and Polishing, Pysanky Egg Dyeing, Stargazing

Personal Statement

I am an undergraduate student majoring in Physics at the University of Idaho. I was born in Homer, Alaska and grew up living all over Alaska. My parents are both teachers, and for the first 15 years of my life taught in the Alaskan bush. When I was in the tenth grade my family moved to Cheney, Washington and I finished high school there.

When I graduated I decided to attend the University of Idaho because they offered me the most scholarships out of the colleges I had applied to. I started majoring in microbiology, but switched to physics in my sophomore year. Microbiology required almost no math, and I wanted to take more math classes. In addition, physics fascinated me. I wanted to know how the universe worked and why things are as they are.



Florida Institute of Technology

Melbourne, Florida
Astronomy/Astrophysics
Bachelor of Science, May 2006



NASA Academy Research Project:

*“Construction of a Swift Data Archive and
Development and Implementation of Swift
Gamma Ray Burst Analysis Tools”*

Principal Investigator: Chryssa Kouvelitotu

Academic and Research Experience

- ***Villanova University, Villanova, PA, Summers 2003, 2004:***
Research Assistant, Astronomy & Astrophysics Dept. Worked with Dr. Edward Sion using IUE data to model and analyze binary star systems known as cataclysmic variables. Analyzed the system WW Ceti in depth.
- ***Villanova University, Villanova, PA, Summer 2003:***
Research Assistant, Astronomy & Astrophysics Dept. Worked with Dr. Laurence DeWarf on the Sun In Time / Solar Twin project. Analyzed a catalog of nearly 100 stars searching for those that closely resemble our Sun.

Memberships and Activities

- *Crimson* student newspaper, News Editor Oct. 2002 – May 2003, Editor-in-Chief May 2003 – May 2005
- Student Ambassadors, Member Aug. 2003 – May 2004, Historian May 2004 – May 2005
- Quality of Life Committee, Member Aug. 2003 – Aug. 2004
- Student Government, Senator Sept. 2003 – Sept. 2004
- New Student Orientation Panther Prep Leader, Aug. 2003, Aug. 2004
- College Players, Member Oct. 2002 – May 2003
- FIRST Robotics Competition, Member Sept. 2000 – June 2001, Co-Head Sept. 2001 – June 2002
- NASA’s Space Academy and Advanced Space Academy in Huntsville, AL, Summers 1997 - 2000



Skills and Certifications

- Operating Systems: Windows 95 / 98 / 2000 / XP, Macintosh, UNIX
- Software: Microsoft Office, Adobe Photoshop, Adobe Pagemaker, Macromedia Dreamweaver
- Computer Languages: C++, HTML

Honors and Awards

- *Strathmore's Who's Who*, 2005 – 2006
- Student Ambassador of the Year, 2004 – 2005
- *Who's Who Among Students in American Universities & Colleges*, 2005
- Florida Tech Student Leader of the Year, 2003 – 2004
- Phi Eta Sigma national honor society, April 2003
- Florida Tech Trustee Scholarship, 2002 – 2006
- The Agnes Irwin School, Graduate with High Honors, June 2002

Hobbies and Interests

Reading, writing, photography, movies, space, the beach, the Internet, traveling, history, researching, and volunteering my time to help others.

Personal Statement

Nature is God's canvas, and the night sky is the blank page where my dreams are composed. As an active college student with a busy life, it is so easy to get caught up in everyday mundane happenings and worries. But the sky calls me, calming me when I glance upon it, filling my mind with endless dreams, questions and wonders. I work relentlessly so that I may one day contribute to the questions posed by scientists and children alike. Where did we come from? What is out there? Are we alone?

Instinctively and passionately I explore these questions and more, always a scientist, inquiring what, why, when and how. With years more of schooling ahead of me to reach my educational goal, I find I do not mind. Learning should never cease. Questions should always be in our minds. I will always pursue the human purpose of discovering and appreciating divine creations.

Julia E. Thrower

Massachusetts Institute of Technology

Cambridge, Massachusetts

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NASA Academy Research Project:

"Multi-physics Modeling of Propulsion Systems"

Principal Investigator: George Schmidt

Academic and Research Experience

- ***Experimental Projects Lab, MIT, Sept. 2004 – May 2005:***
Density Uniformity in a Low Reynolds Number Supersonic Flow
- ***Mars Gravity Biosatellite Project, Sept. 2002 – Mar. 2003:***
Payload Prototyping Lead: Worked on a satellite to study the effects of Martian gravity on mice, simulated by a centrifuge.
- ***Laboratory for Experimental & Computational Micromechanics, Spring 2002:***
Research Assistant: Investigation of fretting fatigue on aircraft engine dovetail rotor blade attachments.
- ***Aero-Astro Undergraduate Teaching Laboratory, Fall 2001:***
Technical Assistant: Organized, assembled and tested radio controlled airplane kits and Estes rockets while mentoring.
- ***Clark Scholars Program, Texas Tech Univ, Summer 2001:***
Research Assistant: Complex analysis and fractal geometry.

Work Experience

- ***ATA Engineering, Inc., San Diego, CA, January 2005:***
Assistant Engineer: Analyzed constrained layer and mass damping on an oscillatory robotic arm, using I-DEAS FEA.
- ***NASA Jet Propulsion Laboratory, Summer 2004:***
"Safe On Mars" Mission Study Systems Engineer: Coordinated a student team to design a robotic Mars mission.
- ***NASA Kennedy Space Center, January 2004:***
January Operational Internship Experience (JOIE): Toured KSC Shuttle processing facilities to learn design and operations.
- ***The Boeing Company, Seattle, WA, Summer 2003:***
F/A-22 Airframe Change Team: Document and approve changes to designs and processes. Built models in CATIA.
- ***AeroAstro, Inc., Boston, MA, January 2003:***
Extern: Market research for a new launch vehicle and a satellite cargo-tracking device.
- ***General Electric Aircraft Engines, Lynn, MA, Summer 2002:***
Manufacturing Maintenance Assistant: Rotating Parts manufacturing floor to organize tool storage & ordering system.

Memberships and Activities

- MIT Society of Women Engineers: Co-Secretary, 2002, Co-Vice President, 2003
- MIT Protestant Student Community: Member, Sept. 2002 – May 2005, Treasurer, May 2004 – May 2005
- MIT Student House: Treasurer, Jan. 2003 – Dec. 2004, President, Jan. – May 2005

Skills and Certifications

- Computer Skills: Microsoft Office, Publisher, Visio, Project. CATIA, Solidworks, Cosmosworks, I-DEAS. Maple, Mathematica, Matlab, Ada, C++, Java
- Foreign Languages: French
- Machine Shop Experience

Honors and Awards

- MIT Society of Women Engineers Scholarship, May 2002
- 3rd Place, Engineering Aerial Design Competition, May 2003
- Best Teamwork Award, Aerodynamics Team Project, Dec. 2003

Hobbies and Interests

Distance running, Reading, Singing

Personal Statement

I grew up near Pittsburgh, Pennsylvania, where I attended high school and developed a keen aptitude for math and physics. Due to this interest, I decided to pursue engineering as a career, and enrolled at the Massachusetts Institute of Technology. I look forward to participating in the 2005 NASA Academy program at the Marshall Space Flight Center this summer. Following NASA Academy, in the fall of 2005, I plan to begin working full time at ATA Engineering, Inc., a small technical consulting firm based in San Diego, CA that offers structural dynamics analysis, testing, and design services to aerospace companies worldwide. I expect to return to graduate school after gaining about a year or two of work experience to earn a masters degree.



University of Minnesota

Minneapolis, Minnesota
Aerospace Engineering
Bachelor of Science, May 2005



NASA Academy Research Project:

*"Pump Hydrodynamics for Advanced Expander
Cycle Engines"*

Principal Investigator: Lisa Griffin

Academic and Research Experience

- ***University of Minnesota, Minneapolis, MN, 2001-2005:***
Received degree in Aerospace Engineering (Summa Cum Laude).
- ***University of Minnesota Solar Vehicle Project, Minneapolis MN, Sept 2003-June 2005:***
Performed various duties as Aerodynamics team leader. Designed and performed fluid dynamics tests on aeroshell of the 2005 Formula Sun Champion, *Borealis III*. Procured materials for and helped build the vehicle.
- ***Society of Automotive Engineers Aero Competition West, Minneapolis MN, Sept 2004-May 2005:***
Designed and performed computational fluid dynamics on the wing and outer shell of *Bird of "Pray"*. Built wing structure using experience with carbon fiber composites.
- ***Senior Design Project: Nanosatellite, Minneapolis, MN, Jan 2004-May 2005:***
Designed outer shell and integrated parts into body of a close-range imaging nanosatellite. Performed dynamic analysis of fully integrated part.

Work Experience

- ***Lockheed-Martin, Eagan, MN, April 2005-May 2005:***
Performed composites work on *Sky Spirit* UAV.

Memberships and Activities

- University of Minnesota Solar Vehicle Project Sept 2003-May 2004

- Society of Automotive Engineers Aero West Competition Sept 2004-May 2005

Skills and Certifications

- Computer Skills: Pro/Engineer Wildfire, Pro/Engineer 2001, Solidworks, ANSYS CFX 5, Matlab, Simulink, AutoCAD, Mathematica, Microsoft Office: Word, Excel, Access, Outlook, Front Page, Power Point, DOS, Mac OS X, Windows 98/NT/2000/ME/XP, Unix, Linux, Adobe Photoshop, Illustrator, Jasc Paint Shop Pro, HTML, C/C++.
- Composites skills: Designing and building mold tooling, prepreg and wet layup vacuum molding (carbon fiber, aramid, E-Glass), construction with aerospace grade adhesives and resins.
- Leadership skills: Design team leading.

Honors and Awards

- Dean's list Fall 2001, Fall 2003, Spring 2004.
- IT Student Leadership Award 2004 & 2005

Hobbies and Interests

3D computer modeling, RC aircraft design, soccer, acting, and world history.

Personal Statement

I have always been a very passionate and energetic scientific thinker. From a very young age I was instilled with a fondness for all things technical. When I graduated from high school the major I would choose in college was never in question. Aerospace engineering was my natural choice, thus I attended the best local school that would accommodate this – the University of Minnesota. There I studied Aero E. diligently for four years, and never digressed from that path. In the last two years I have channeled my passion for science into two well-known and popular design projects; the University of Minnesota Solar Vehicle Project, and the Society of Automotive Engineers Aero Competition. From these two demanding projects I have learned that my future as an engineer lies in design and leadership.



University of Virginia

Charlottesville, Virginia
Aerospace Engineering
Bachelors of Science, May 2006



NASA Academy Research Project:

"NTP Engine System Evaluation and Conceptual Design"

Principal Investigator: Karl Nelson

Academic and Research Experience

- **Solar Airship Team, Charlottesville, Virginia 2003**
Assisted in developing design for team's solar powered airship including discussion of shape, materials, and aerodynamic quality. Airship participated in national competition
- **Robotic Design Showcase, Charlottesville, Virginia 2002**
Designed and programmed a musical robot that marched, played music, and danced in unison with other robots
- **Microgravity Research Team, NASA Glenn Research Center, Cleveland, Ohio 2001**
Team awarded microgravity research competition and was given opportunity to research at NASA facility. Studied combustion of cotton in a microgravity environment. Designed and conducted experiment using drop tower and analyzed results and presented findings
- **Advanced Space Academy, NASA Space Camp, Huntsville, Alabama Summer 1999-2001**
Participated in mock astronaut training and scientific lectures about space and aerospace development

Memberships and Activities

- Sigma Gamma Tau Honor Society for aerospace engineers, secretary 2005-present
- American Institute of Aeronautics and Astronautics, member 2003-present
- Alpha Delta Pi sorority, committee chairman 2003-present
- Society of Women in Engineering, member 2002-present
- Intersivity Christian Fellowship, executive board 2002-present
- Club Lacrosse Team, defensive wing, 2002-present

Skills and Certifications

- Proficient in Japanese
- Studied abroad in Japan and Peru.
- C++, Visual Basic, MathCAD, Minitab, Matlab, finite elements, Microsoft Office
- Certified SCUBA diver

Honors and Awards

- National Collegiate Scholars, membership by invitation
- Intermediate Honors, top 20% of engineering class after two years of study
- Jefferson Scholar, finalist, 2002
- University of Virginia Book Award, 2002

Hobbies and Interests

Sports and athletics (running, lacrosse, soccer, baseball, etc), Traveling, Space and planes, marine biology, scrapbooking, and baking.

Personal Statement

I've always wanted to fly. When I was three, I walked into the cockpit of the airplane carrying me and my family to Florida, made friends with the pilots, touched every button imaginable, and cried when my parents made me leave. Since then, I have been captivated by flight. As I grew older my passion for space expanded; when I was twelve I attended Space Camp with my best friend and became committed to pursuing my passion. I followed the space program closely, learned as much as I could about the history of spaceflight, and dreamed of pursuing a career with NASA.

I attended Advanced Space Academy three more times in high school, and was reaffirmed that my dreams lay with the stars. I decided to attend the University of Virginia and major in aerospace engineering. After college, I plan on either pursuing my career with NASA or obtaining a graduate degree in my field of study. I am not certain yet what the specifics of my career will entail, but I am confident that I want to explore, develop, and research on NASA's team.



Program Director

Dr. Frank Six

Frank Six is the Manager of the Earth and Space Science Laboratory at the Marshall Space Flight Center. He joined Marshall in 1986 as Deputy Project Scientist for Hubble, then became assistant to the Director of the Space Science Laboratory and then deputy to the Chief Scientist. He directed the Marshall Academies in '94, '95 and '96, and led all university programs from '89 to '96. Before coming to Marshall, Frank worked for Cornell University as assistant to the director of the Arecibo Observatory. Prior to that, he taught physics and astronomy at Western Kentucky University where he was Chairman of the Department for 17 years. Upon receiving the PhD in physics from University of Florida, Frank joined Brown Engineering in Huntsville working on Apollo. His research areas are radio astronomy and planetary magnetospheres. He is married with six children and eight grandchildren and loves to explore the coastal regions of the Gulf of Mexico.

Program Manager

Dr. Gerald R. Karr

Dr. Karr is currently Professor of Mechanical and Aerospace Engineering at the University of Alabama in Huntsville (UAH). Since 1992, Dr. Karr has also served as the UAH Campus Director of the Alabama Space Grant Consortium (ASGC). Dr. Karr also served as the Chair of the Mechanical and Aerospace Engineering Department at UAH from 1986 through 1999. Dr. Karr has since 1978 been the University Director of the highly successful NASA Summer Faculty Research Opportunity (NSFRO) program. Dr. Karr has also been an active researcher in the areas of satellite drag, high energy lasers, cryogenics, spacecraft thermal design, and computational fluid mechanics. Dr. Karr earned his BS (1964), MS (1966), and PhD (1969) in Aeronautical and Astronautical Engineering at the University of Illinois at Champaign-Urbana. For recreation, Dr. Karr enjoys golf, running, sailing, visiting with his children and grandsons.

Associate Program Manager

Lisa Liever

Lisa provides considerable support in the initial establishment and organization of the 2005 MSFC Academy. Her duties include handling financial issues as they pertain to the Academy.

Space Grant NASA Academy Consultant

Jackie Reasoner

Assistant Director of the Alabama Space Grant Consortium for 16 years, has "mothered" and run the previous four (1994-1997) MSFC Academy programs. She assists the 2005 Academy by task managing and by being the all around cheerleader and supporter. Jackie collects cats and enjoys walks, hikes, travels as much as possible on nature and adventure trips, most music, and studies cultures and religion. She holds a private pilot's license and loves whitewater rafting.

Operations and Logistics Manager

Jessica Culler

Jessica is an alumna of the 2004 NASA Academy at Ames Research Center. In May 2005, she graduated from the University of Oklahoma with a Bachelor of Science in Aerospace Engineering. During her undergraduate years, she completed four co-op tours at NASA Johnson Space Center. In fall 2005, she will be attending the Master of Science in Space Studies program at International Space University in Strasbourg, France. She enjoys martial arts (jaido, aikido, and kung fu), wildlife rehabilitation, pop culture, supporting space exploration, and learning about languages and cultures.

Program Support and Assistant

Paula Raby

Paula serves as a management support assistant to Dr. Frank Six, Director of the Earth and Space Science Laboratory. She is providing managerial support to the 2005 Marshall NASA Academy staff.

Academy Alumni Coordinator

Omar R. Mireles

Omar is an alumnus of the 2002 NASA Academy at Goddard Space Flight Center. He has Bachelor degrees in Mechanical Engineering and Applied Mathematics from New Mexico State University, a Masters degree in Mechanical Engineering from Georgia Tech, and he is currently working on a doctorate in Nuclear and Radiological Engineering from the University of Florida. He conducts research in the area of space nuclear power and propulsion at the Early Flight Fission Test Facility at NASA Marshall Space Flight Center. He enjoys reading, exercising, flying, scuba diving, and skydiving.



Links

- **NASA Academy:**
<http://www.nasa-academy.nasa.gov/>
- **NASA Academy Alumni Association:**
<http://www.nasa-academy.org/>
- **NASA Agency:**
<http://www.nasa.gov>
- **NASA Marshall Space Flight Center:**
<http://www.msfc.nasa.gov/>
- **International Space University:**
<http://www.isunet.edu>
- **The Soffen Memorial Fund:**
<http://www.nasa-academy.org/soffen/donors.html>