



REQUIRED Cover Page

APPLICATION FOR PROFESSIONAL DEVELOPMENT GRANT

**All applicants please complete this cover page.

Choose one: <input type="checkbox"/> Creative activity <input type="checkbox"/> Research activity <input checked="" type="checkbox"/> Professional Enhancement activity	Date of Last PDG Award (Semester and Year awarded): <u>Spring, 2006</u> Date of ATU Faculty Appointment (Semester and Year): <u>Fall, 2003</u>
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- 1. Project Title: International Seminar on Teaching Nanoscience with Scanning Probe Microscopy
- 2. Name of Principal Investigator/Project Director: Daniel Bullock
- 3. School (abbrev): PLS 4. Department: Physical Science
- 5. Campus Mail Address: McEver Hall Room 03 6. PI/PD Campus Phone: 968-0230
- 7. Amount Requested: \$ 1120 8. Total Cost of Project: \$ 1120
- 9. Does this project involve: 10. Duration of Project: 03/22/07 – 03/24/07

Yes No

- human subjects?
- animals/animal care facility?
- radioactive materials?
- hazardous materials?
- biological agents or toxins restricted by the USA Patriot Act?
- copyright or patent potential?
- utilization of space **not** currently available to the PI/PD?
- the purchase of equipment/instrumentation/software currently **available** to the PI/PD?

NOTE: If the answer is "yes" to any of the above questions, the investigator must attach appropriate documentation of approval or justification for use/purchase.

SIGNATURES
[Signature] 2007 Jan. 22
 Department Head Date
[Signature] 1-22-07
 Dean Date

This Section to be completed by the Office of Academic Affairs

PDC Committee Award Recommendation: Yes No

PDC Committee Proposal Rank: of Total Proposals.

Recommendation of VPAA: Yes No

Recommendation of President: Yes No

Award Date: 2/9/07

B. ABSTRACT

The field of nanoscience/nanotechnology has become an important area of science that has impacted the society both economically and socially. The administration at Arkansas Tech University has had the foresight to invest in some nanoscience equipment for use in a course for our students. The purpose of this proposal is to send the principal investigator to a workshop with other nanoscience educators to obtain new ideas in teaching the quickly evolving subject to our undergraduate students.

C. PURPOSE / OBJECTIVES

The objective of this professional enhancement project is to obtain new and innovative material for use in the "Introduction to Nanoscience" course taught at ATU.

D. SIGNIFICANCE / NEED

This event brings together the best nanoscience educators from all over the world. By attending this workshop I will be able to learn new ideas and techniques to our undergraduate students a world-class experience in nanoscience.

E. PROCESS FOR ATTAINMENT OF OBJECTIVES / GOALS

This workshop, 3rd International Seminar on Teaching Nanoscience with Scanning Probe Microscopy, is organized by *Nanoscience Instruments*, the leading manufacturer of educational nanoscience instruments. Among the noted institutions that will be hosting break out sessions are: Cornell University (consider the world leader in Nanoscience Education), Northwestern University, and Harvard University. The workshop will take place in Chicago, Illinois.

F. DISSEMINATION OF RESULTS

The results of this conference will be used in the classroom and I will give a presentation at the Arkansas-Oklahoma-Kansas Sectional meeting of the American Association of Physics Teachers.

G. REPEATED REQUESTS

This proposal is not a repeat request.

H. BUDGET

**PROPOSED BUDGET
FACULTY RESEARCH GRANT**
(include budget categories as appropriate)

1.	Non-work study stipend	<u>0.00</u>
	Fringe benefits @ .4% (4/10 percent) of non-work study stipend	
2.	Supplies (please list items to be purchased and estimated price per item including taxes and shipping, if appropriate):	
	Conference Registration	<u>300.00</u>
	Total estimated supplies \$	<u>300.00</u>
3.	Travel (please list travel expenditures by date and estimated costs):	
	Roundtrip flight from Little Rock to Chicago	<u>300.00</u>
	Hotel 2 nights	<u>300.00</u>
	Transportation (taxi, subway, etc)	<u>100.00</u>
	Meals for three days	<u>120.00</u>
	Total estimated travel \$	<u>820.00</u>
	TOTAL PROPOSED BUDGET \$	<u>1120.00</u>

I. BIBLIOGRAPHY: Provide standard citations for material referenced.

J. APPLICATION VITA (maximum: 3 pages)

DANIEL BULLOCK

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Russellville, AR 72801

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Office Ph.:(479) 968-0230
Fax: (479) 964-0837

EDUCATION

UNIVERSITY OF ARKANSAS
Ph. D. Physics (Nanoscience)

Fayetteville, AR
May 2001

UNIVERSITY OF ARKANSAS
M. S. Applied Physics

Fayetteville, AR
May 2000

ARKANSAS TECH UNIVERSITY
B. S. Physics

Russellville, AR
May 1997

EXPERIENCE

Assistant Professor of Physics

Arkansas Tech University, Department of Physical Science, Russellville, AR, 5/2003 – present, Department Head: Professor Jeff Robertson

Teaching Activities

- Awarded “Outstanding Professor of the Year” by the Arkansas Tech University Student Government Association (2006).
- Implemented a campus wide teaching initiative using personalized wireless remote control technology to enhance the teacher-student engagement process.
- Averaged 4.50 out of 5.00 from 2004-2006 on all course student evaluations compared to the department average of 4.34 over the same three years.
- Upper division courses taught: Solid State Physics, Statistical Mechanics, Advanced Modern Physics Laboratory, Introduction to Nanoscience.
- Lower division courses taught: Physical Principles I & II (algebra based physics for pre-professional students), General Physics I & II (calculus based physics for engineering students), Physics I & II Lab, Introduction to Physical Science (freshman level introductory physics course for non-majors), Introduction to Physical Science Lab

Assistant Professor of Physics continued*Research Activities*

- Awarded a “Nanoscience Education Initiative” grant from the Arkansas Tech University Office of Academic Affairs worth \$100,000 (2006).
- Principal Investigator on funded Center for Energy Studies proposal titled, “Nanoscale Surface Effects on Biological Solar Cells”, worth \$10,000 (2006).
- Principal Investigator on funded Arkansas Tech University Undergraduate Research Council proposal title, “Domain Mapping of Magnetic Nanoparticles” worth \$2,500 (2006). This project includes funding to support one undergraduate student.
- Awarded summer research fellowship with the Materials Science and Engineering Center at the University of Arkansas for, “Cross – Sectional Scanning Tunneling Microscopy of Quantum Dot Arrays”, worth \$7,000 (2006).
- Principal Investigator on funded Arkansas Tech University Professional Development Grant entitled, “Cross Sectional Scanning Tunneling Microscopy (STM) Studies of Quantum Nanostructures”, worth \$1,000 (2006).
- Co-Principal Investigator on funded Arkansas Space Grant Consortium – NASA proposal entitled, “Autonomous Warehouse Robot”, worth \$3,486 (2005). This robot was entered into the South Central robotics competition and won 1st place against school such as Louisiana State University, University of Texas – Austin, Texas A & M, and Texas Tech University.
- Principal Investigator on funded Arkansas Space Grant Consortium – NASA proposal entitled, “Sample Preparation Algorithms for Cross Sectional Scanning Tunneling Microscopy Experiments”, worth \$4,150 for one year (2005).
- Awarded summer research fellowship with the Materials Science and Engineering Center for “Cross-Sectional Scanning Tunneling Microscopy on III-V Based Nanostructures”, worth \$13,000 (2005).
- Principal Investigator on funded Arkansas Tech University Assessment Committee grant entitled, “Real-Time Classroom Assessment”, worth \$1,220 for one year. This project, in collaboration with another faculty member, studies the effects of different technologies used in the classroom on learning (2005).
- Co-Principal Investigator on funded Arkansas Space Grant Consortium – NASA grant entitled, “Portable Spectrograph for Astronomical Observations”, worth \$18,175 for one year. This project in involves three faculty members from two different departments. Additionally, the funds from this project will support two undergraduate students to conduct the research for one year. These students were able to visit Johnson Space Center to review current NASA research projects (2005).
- Principal Investigator on funded Arkansas Space Grant Consortium – NASA grant entitled, “Dynamic Electronic Device Production Software”, worth \$2,600 for one year. This proposal was able to fund research performed by two undergraduate students in 2004. Additionally, these students were able to travel to the Stennis Space Center to observe current NASA research projects.
- Attended the 2004 Arkansas Tech University Undergraduate Research Symposium, Russellville, AR. – 04/14/04.
- Attended the 88th Annual Meeting of the Arkansas Academy of Science,

Jonesboro, AR. – 04/02/04 – 04/03/04.

Assistant Professor of Physics continued

Research Activities

- Principal Investigator on funded Arkansas Tech University Undergraduate Research grant entitled, “Growth Rate Calculations”, worth \$2,500 for one year. This proposal was able to fund research performed by two undergraduate students in 2003.
- Co-Principal Investigator on funded Arkansas Space Grant Consortium – NASA grant entitled, “Practical Solar – Electric Car”, worth \$5,350 for one year.

Service Activities

- Appointed to University Assessment Committee (3 year appointment).
- Elected to University Library and Media Committee.
- Served on Nanotechnology Group formed by the Vice-President of Academic Affairs.
- Served on the selection committee for the Truman McEver and the Ruben Caudle scholarship awards.
- Served on Faculty Peer Review Committee (2 years).
- Served on Faculty Athletic Committee (elected 2 years, and appointed by the President of ATU one year).
- Chaired Department of Physical Science Machine Shop Committee.
- Taught Upward Bound Math & Science Students during a six-week summer program.
- Principal Investigator on funded Arkansas Tech University Assessment Committee grant entitled, “Real-Time Classroom Assessment”, worth \$1,220 for one year. This project, in collaboration with another faculty member, studies the effects of different technologies used in the classroom on learning (2005).
- Guest speaker for Upward Bound Math & Science Winter Program.
- Judged Student Organization Booths for 2006 Homecoming.
- Judged Student Organization Floats for 2006 Homecoming Parade.
- Judge for the Arkansas Junior Humanity and Science Symposium.
- Attended an Assessment Conference, Little Rock, AR – 04/30/04.
- Attended an Assessment Workshop, Little Rock, AR – 05/25/04.