

Columbia University  
NATIONAL SCIENCE FOUNDATION  
**Research Experiences for Undergraduates  
in Nanotechnology**

*Summer Program for 2007*

The Columbia University Center for Electron Transport in Molecular Nanostructures, a National Science Foundation Nanotechnology Center, will support about six outstanding undergraduates as Summer Research Fellows for the period from May 29-August 3, 2007. This National Science Foundation - Research Experiences for Undergraduates (NSF-REU) program provides a \$3500 stipend for each successful candidate, free campus housing (worth over \$2600) in which you are expected to reside, and possible assistance with round-trip transportation (up to \$500 if necessary). Those selected will have an opportunity to participate fully in the activities of one of the nation's outstanding new interdisciplinary Nanoscale Science and Technology Centers, as well as in other exciting research on campus. This Center draws faculty from the Departments of Physics, Chemistry, Applied Physics, Chemical Engineering, and Electrical Engineering, and includes collaborative research with nearby universities (including CCNY, Barnard College and Rowan University) and industry (including IBM Yorktown Heights and Bell Laboratories, Lucent Technologies).

The Columbia Nanocenter is conducting research that will establish the foundation for new paradigms for information processing through the fundamental understanding of charge transport phenomena unique to nano-scale molecular structures. The research program involves exploration of the structures and electron transport properties of molecular single crystals where electron transport is confined to two dimensions, of carbon nanotubes where transport is in one dimension, and of single molecules assembled onto nano-scale scaffolding. For more details, please visit our web site: <http://www.cise.columbia.edu/nsec/>.

During the REU program, students will also be involved in workshops, seminars, visits to local industry, recreational activities, a symposium of presentations by REU students, and other activities.

Prospective candidates should arrange to have an official transcript and two letters of recommendation (preferably from math, science or engineering professors at their home institution) forwarded to the Program Director at the address below, along with the completed application form; this form can be found at <http://www.cise.columbia.edu/NSEC/>. The deadline for receipt of completed applications is Thursday, March 1, 2007. Successful candidates will be notified at the end of March. For additional information, please visit the website or contact:

Justine Herrera  
Nanoscale Science and Engineering Center – REU  
Columbia University  
530 West 120th St. MC 8903  
Schapiro/CEPSR, Room 1001  
New York, NY 10027

Tel: 212-854-3964  
Fax: 212-854-1909  
E-mail: [jh2477@columbia.edu](mailto:jh2477@columbia.edu)

*Columbia University is an affirmative action, equal opportunity employer, and the Center specifically invites and encourages applications from women, minorities, and the physically challenged.*

Nanoscale Science and Engineering Center at Columbia University

Summer 2007

Research Experiences for Undergraduates

Complete application must be received by March 1, 2007 for program consideration.

APPLICATION FORM

Name: Last \_\_\_\_\_ First: \_\_\_\_\_

Social Security Number: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Resident status (By NSF Guidelines, this program is available to U.S. citizens and permanent residents only):

U.S. citizen \_\_\_\_\_ Permanent resident \_\_\_\_\_

**Optional** (The following information is strictly confidential; it is requested for NSF statistical purposes only):

Gender: M \_\_\_\_\_ F \_\_\_\_\_

*Ethnic group/racial background:*

White, not of Hispanic origin \_\_\_\_\_

Hispanic \_\_\_\_\_

African American/Black, not of Hispanic origin \_\_\_\_\_

Asian \_\_\_\_\_

Native American or Alaskan Native \_\_\_\_\_

Pacific Islander \_\_\_\_\_

College/University: \_\_\_\_\_

Major/Department: \_\_\_\_\_

School Address: \_\_\_\_\_

School Phone: \_\_\_\_\_

\_\_\_\_\_

Home Address: \_\_\_\_\_

Home Phone: \_\_\_\_\_

\_\_\_\_\_

E-mail Address: \_\_\_\_\_

Currently Completing (year):      1<sup>st</sup>      2<sup>nd</sup>      3<sup>rd</sup>      4<sup>th</sup>

Please answer this question: "Will final exams at my University be completed before Sunday, May 27, 2007?"

YES      NO

Please answer this question: "Do I plan to be in residence in the program from May 29-August 3, 2007?"  
(Does not include special events such as weddings.)

YES      NO

Have you participated in other NSF REU programs in the past?      YES      NO

If "yes", which program(s)? \_\_\_\_\_

Expected Date of Graduation from College: \_\_\_\_\_

**Research Interests** [Please rank top 5 interests from 1 (most interested) to 5 (least interested) and place an "X" next to those topics that do interest you at all]

- Physics of electron transport.
- Electronic conduction in molecules.
- Nanostructure fabrication.
- Nanostructure characterization.
- Fabrication and characterization of nanoelectronic devices.
- Synthesis of electronically active molecules.
- Structure of molecules at interfaces.
- Carbon nanotubes: properties.
- Theory of electron transport in molecules.

Please arrange for an up-to-date official transcript to be sent to the address below, along with the completed application form, biographical statement and two letters of recommendation:

Justine Herrera  
Nanoscale Science and Engineering Center – REU  
Columbia University  
530 West 120th St. MC 8903  
Schapiro/CEPSR, Room 1001  
New York, NY 10027

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**Nanoscale Science and Engineering Center at Columbia University**  
Summer 2007  
*Research Experiences for Undergraduates*

**BIOGRAPHICAL STATEMENT**

Please return the completed biographical statement by Thursday, March 1, 2007, to the following address:

Justine Herrera  
Nanoscale Science and Engineering Center – REU  
Columbia University  
530 West 120th St. MC 8903  
Schapiro/CEPSR, Room 1001  
New York, NY 10027

In order to help us learn more about you, please write a brief essay (no more than 1 page) describing:

- 1) Your research interests and experiences.
- 2) Which REU projects interest you and why?
- 3) Expectations for the summer.
- 4) Graduate school plans, and your career plans and goals.
- 5) Why do you want to do research in a materials center and why particularly at the Columbia NSEC?

**Nanoscale Science and Engineering Center at Columbia University**

Summer 2007

*Research Experiences for Undergraduates*

LETTER OF RECOMMENDATION

Please return the completed letter of recommendation with this cover letter by Thursday, March 1, 2007, to the following address:

Justine Herrera  
Nanoscale Science and Engineering Center – REU  
Columbia University  
530 West 120th St. MC 8903  
Schapiro/CEPSR, Room 1001  
New York, NY 10027

Applicant's Name: \_\_\_\_\_

Recommender's Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_