

Synchrotron Investigations

8.1 Synchrotron research case studies

Read the following research articles to gain a feel for some of the research that is being undertaken using synchrotrons around the world.

- 8.2 Study of respiration and tracheal function in insects.
- 8.3 Did heavy metal kill Beethoven?
- 8.4 Ancient Warriors and the Origin of Chinese Purple.
- 8.5 Revealing the Molecular Origins of Life.
- 8.6 Corrosion.

For international projects go to <http://www.nsls.bnl.gov/about/everyday>

For Australian Synchrotron case studies go to <http://www.synchrotron.vic.gov.au>

Your task is to use the internet to find a research project that you find interesting. Run your idea past your teacher, then when your project topic has been decided on, complete the following research tasks.

Summarise the article by answering the following questions.

1. What problem was being researched?
2. What part of the spectrum was selected for the beamline? (name the type, frequency and wavelength of the radiation)
3. How did this EMR react with the matter?
4. What did the scientists discover?
5. How is this discovery or information useful?
6. From this discovery/information, can you think of any follow-on investigations that could increase knowledge in this area or discover something new?



Everyday Science



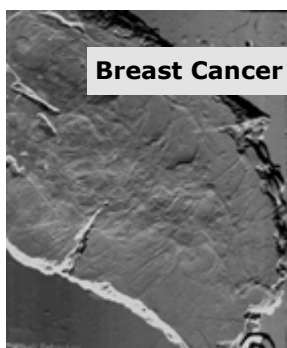
at the National Synchrotron Light Source

INTRODUCTION

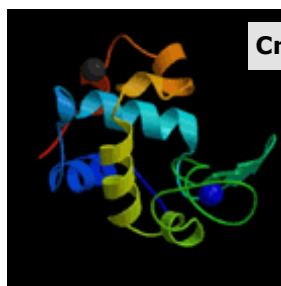
The National Synchrotron Light Source is a scientific facility that is funded by the U.S. Department of Energy. Each year, more than 2500 scientists from all over the world come to perform experiments at the NSLS. This website describes some of the everyday science that goes on at the NSLS and how it may impact your everyday life. These articles were created by high school students in the Community Summer Science Program at BNL. They can also be found on the web at: <http://nslsweb.nsls.bnl.gov/infrared/everyday/index.html>



Synchrotrons



Breast Cancer

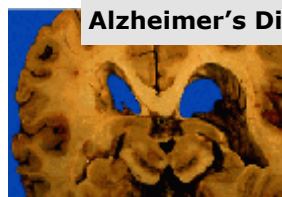
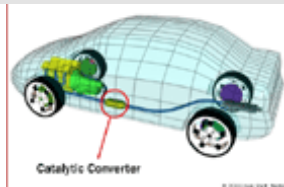


Crystals



Osteoarthritis

Catalytic Converters



Alzheimer's Disease

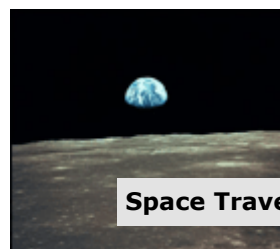
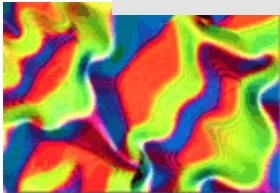


Corrosion

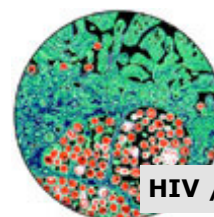
Environmental Cleanup



Hard Drives



Space Travel



HIV / AIDS

SCIENCE EDUCATION and TOURS at Brookhaven National Laboratory

SCIENCE EDUCATION:

BNL Programs for High School Students

- Community Summer Science Program (CSSP)
- Minority High School Apprenticeship Program (MHSAP)

DOE Programs for Undergraduate Students

- Community College Institute (CCI)
- Energy Research Undergraduate Fellowship (ERULF)
- Pre Service Teachers (PST)

For more information on specific programs, contact:

Office of Educational Programs
 Brookhaven National Laboratory, Bldg 438
 Upton, NY 11973
 (631)344-4503
 OEP@bnl.gov
<http://www.bnl.gov/scied/>

TOURS:

- Lab Tours for High School Students
- College and Group Tours
- Summer Sundays

For more information on specific tours, contact:

Community Involvement Tour Program
 Brookhaven National Laboratory
 Upton, NY 11973
 (631)344-2400
 tours@bnl.gov
<http://www.bnl.gov/community/>

For more information on student research at the National Synchrotron Light Source, contact Dr. Lisa Miller at (631) 344-2091 or by email at lmiller@bnl.gov.