

# SCIENCE EXPLORATION DAYS 2009

SENIOR HIGH DAY

Grades (9) 10-12

Thursday, May 14

9:30 am - 1:00 pm

Sponsored by  
Central Western Section  
Science Teachers Association of New York State

St. John Fisher College  
Rochester, New York 14618

## 201. CRASH DYNAMICS

Jean Triest and Trooper Robert Brown (Monroe County Office of Traffic Safety)

What happens in a car crash? Experience the force in a crash using the Safety Belt Convincer. Learn why safety belts help protect ALL the vehicle occupants.

## 202. WILDLIFE DETECTIVE

Ron Schroder (NYS Department of Environmental Conservation, retired)

You'll learn how to detect the wildlife that lives around us by identifying the clues they leave behind. Hands-on samples will aid your sleuthing.

## 203. EYE, TISSUE, AND ORGAN DONATION

Karen Guarino (Rochester Eye and Tissue Bank)

Team up with others to play an interactive game "STAT RUN" that is fast paced, full of fascinating information, and designed to teach and explore the field of organ and tissue donation.

## 204. THE EXCITEMENT OF CHEMISTRY

Dr. Kenneth Schlecht (SUNY College at Brockport)

View an array of numerous chemical phenomena intended to surprise you and catch your interest. Witness explosions, color changes, and fire, all designed to generate thought and a scientific explanation.

## 205. EINSTEIN'S RELATIVITY – 100 YEARS OLD AND STILL VERY COOL!

Dr. Steven Manly (University of Rochester)

We will discuss the origin and consequences of Einstein's special theory of relativity, which was published 100 years ago. We will explore the relative nature of space and time, including bizarre phenomena such as time dilation, length contraction, and the relativistic concepts of simultaneity and causality.

## 206. ADVENTURES IN CIVIL ENGINEERING

William VanAlst (American Society of Civil Engineers)

The role of the civil engineer in solving problems is developed through discussions. A variety of careers in engineering will be explained.

## 207. HUBBLE SPACE TELESCOPE DISCOVERIES

James Secosky (Finger Lakes Community College)

Take a look at some of the awesome discoveries made with the Hubble Space Telescope!

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## 208. GEOGRAPHY AND GEOLOGY OF MARS

James Secosky (Finger Lakes Community College)

The speaker is an amateur astronomer who has received many pictures of Mars using NASA's Mars Global Surveyor. We will discuss naming of major features on Mars and describe the major geologic characteristics.

## 209. BUILD YOUR OWN WEB PAGE

Robert Palmer (Rochester Democrat and Chronicle)

There are lots of programs to help build Web pages, but you can build a simple page from scratch -- controlling images, fonts, backgrounds and other aspects -- with any simple word-processing program like Word Pad or Note Pad - and we will! Each student will have a computer to build and view his or her page, and we'll talk about more complicated pages and what's needed to get pages onto the 'Net.

## 210. LASER FUSION

Dr. Reuben Epstein (University of Rochester, Laboratory for Laser Energetics)

At the Laboratory for Laser Energetics, the powerful 60-beam OMEGA laser compresses and heats tiny hydrogen targets to conditions found near the center of the sun. We will explain how these experiments produce thermonuclear fusion, similar to the fusion power source of the sun, and how this could develop in the future into a commercial power source. We will also present highlights from our Summer High School Research Program.

## 211. THE MYSTERY OF CHOLERA

Sheila Myers (Finger Lakes Institute, Hobart and William Smith Colleges)

This program will involve a look at the history of how the City of Rochester decided to find clean drinking water for its residents. The students will examine how the outbreak of Cholera in the 1800s led the City on a search for safe, clean water from the Finger Lakes. We will examine the symptoms of Cholera and play a game that uses clues to determine how the epidemic spread in Rochester as well as other major Cities in the World.

## 212. BIOINFORMATICS IS REVOLUTIONIZING BIOLOGY

Dr. Gary R. Skuse (Rochester Institute of Technology)

A revolution has taken place in modern biology over the last 40 years. Powerful technologies have been developed in the laboratory which enable us to produce vast quantities of data while new computational tools can be used to analyze those data. Taken together these technologies enable us to answer questions which were previously unapproachable. Nevertheless there remain countless challenges. For example, obtaining the sequence of the entire human genome is only the first step toward understanding what the sequence means, we still need to extract information and knowledge from the raw data. An emerging field within biology is Bioinformatics, the exciting marriage of computers and biotechnology that is being used to identify the genes responsible for disease and to develop drugs and vaccines to combat those diseases. The tools used by bioinformaticists enable discoveries that are leading to rapid advances in our understanding of biology and genetics.

## 213. CRIME SCENE INVESTIGATION

Dan Lyon (Monroe County Sheriff's Office)

Students actively participate in fingerprint development, use of infrared spray, and other techniques used to investigate crimes.

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## 214. GEMSTONE IDENTIFICATION

Paul Dudley (Rochester Lapidary Society)

Learn about the science that is used to identify colored gemstones. Most gemstones can be accurately identified by making careful observations of their properties, and by using a few simple tools and instruments. You will learn how light and gravity interact with gems to reveal their secrets.

## 215. TRANSFORMING NUCLEAR ENERGY INTO ELECTRICITY

Michael Mann (Constellation Energy/Ginna Nuclear Power Plant)

Find out how nuclear energy is safely transformed into electricity at a nuclear power plant. Learn about the Ginna Station's past, present and future. We'll also take a look at some radioactive materials found in your home or neighborhood.

## 216. INCREDIBLE INSECTS

Robert J. Iveson Jr. (Ward's Natural Science Establishment, retired)

Learn why insects are so successful and why “bugs” may not be as bad as most people think they are. The amazing adaptations and dynamic diversity of earth’s most abundant life forms will be illustrated with actual (and live) specimens.

## 217. ULTRASOUND: THE WAVE OF THE FUTURE

Prof. Hamad Ghazle and Jodie Crowley (Rochester Institute of Technology, Allied Health Sciences)

You have heard of, and probably know someone who has had an ultrasound examination. You may have even had an ultrasound examination yourself. Did you ever think that a career in ultrasound might be right for you? Do you like to work, interact with and help people? Do you want to work in the medical field? Are you thinking of becoming a doctor? Do you want to be able to have a job anywhere? Join us to get the answers to these questions and learn about this exciting career.

## 218. LIGHTNING EXTRAVAGANZA

Jamie Oliver (Electronic Engineer, Eastman Kodak Company)

Witness a 4-foot, continuous lightning discharge from a 1,800-watt Tesla Coil. Experience plasma forming, and learn about Nikola Tesla, one of the world’s true genius inventors.

## 219. INTERACTIVE HANDS-ON FORENSIC WORKSHOP

Mr. Timothy Wilson and Ms. Deborah Janes (Eastman Kodak Company)

The drive to unlock the mystery of some crime through the application of science is great for the forensic scientist. The result of the forensic scientist’s work has real meaning with life and death implications and impact upon the criminal justice system. Participants will investigate several different disciplines of analytical sciences as they pertain to forensics. No chemistry background needed for this exploratory workshop; just the willingness to get your hands dirty while having fun.

## 220. MASTODONTS IN THE MUCK

Jutta Siefert Dudley, Ph.D (SUNY College at Brockport)

Many swamps across the Great Lakes region contain the skeletal remains of elephant-like creatures called mastodons that were part of the Ice Age ecosystem. How did these animals live and why did they become extinct? Come find out what we know so far. You'll examine some samples and see how paleontologists digging in the muck uncover the past.

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## 221. EXPLORING ENGINEERING

Dr. Margaret Bailey (Women in Engineering@RIT Executive Director, Kate Gleason Chair, Associate Professor)

This session will introduce students to the world of engineering with some fun, hands-on activities and question and answer session with engineering faculty and students from The Kate Gleason College of Engineering at RIT. This may be of particular interest to girls.

## 222. ENDANGERED WILDLIFE OF NEW YORK

Mr. Mike Wasilco (New York State Department of Environmental Conservation)

Find out why wild animals become endangered and which species are vulnerable to extinction. We will focus on what is being done to help rare wild animals in New York such as Bald Eagles, Bog turtles, and Karner Blue Butterflies.

## 223. CAN YOU HEAR ME NOW? HOW WE HEAR: FROM EARBUD TO BRAIN.

Sarah Klimasewski (Audiologist)

Overview of basic anatomy of the ear and auditory pathway, how sound travel through the pathway, different types of hearing loss and hearing conservation; particularly how to listen to personal stereo systems safely and the hazards of too much “noise”.

## 224. “A+...B-...O...SOMETIMES A LETTER IS NOT A GRADE”

Shelia Stapley (American Red Cross)

The American Red Cross fulfills the need of the American people for the safest, most reliable, most cost-effective blood through voluntary donations. Come learn all about this amazing fluid and how an hour of your time can mean a lifetime to someone else.

## 225. CLIMATE CHANGE AND GLOBAL WARMING

Dr. Jose Maliekal (SUNY College at Brockport)

This program will be an introduction to global warming and related issues. Also, we will discuss strategies to mitigate global warming.

## 226. POLYMERS

Tim Cawley (Rochester Museum and Science Center)

Explore the amazing world of Polymer Chemistry in this totally hands-on program. Perform experiments to make different kinds of polymers like slime, nylon, and Styrofoam. Extract DNA from a banana!

## 227. FORENSIC EVIDENCE SOLVES CRIMES

Sr. Investigator Thomas Gehl (New York State Police)

A synopsis of the duties and functions of the NYSP Forensic Identification Unit (Crime Scene Unit) will reveal the techniques and equipment used to help solve crimes. Fingerprints and DNA evidence will be discussed. Actual crime scene photos (some graphic), including homicide and autopsy photos, will depict some of the procedures used.

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## **Important Information for Students and Teachers**

1. Each student attending SED will be scheduled to view a gigantic exhibit area and three additional 40-minute seminar sessions. No lunch period will be scheduled.
2. A **\$3.00** registration fee is required for each student.
  - a. If a particular school must cancel after sending their fees, 80% refund will be made provided that a letter from the School Superintendent's Office explaining the cancellation is sent to the SED Registrar by the postmark deadline of **February 14, 2009**. No refund will be made if the cancellation letter is postmarked after the deadline.
  - b. If an individual student cannot attend, a substitute may attend using that student's schedule. No individual student refunds are possible.
3. The misbehavior of students at SED will jeopardize their school's participation in future events and will result in that student's immediate suspension from the SED program.