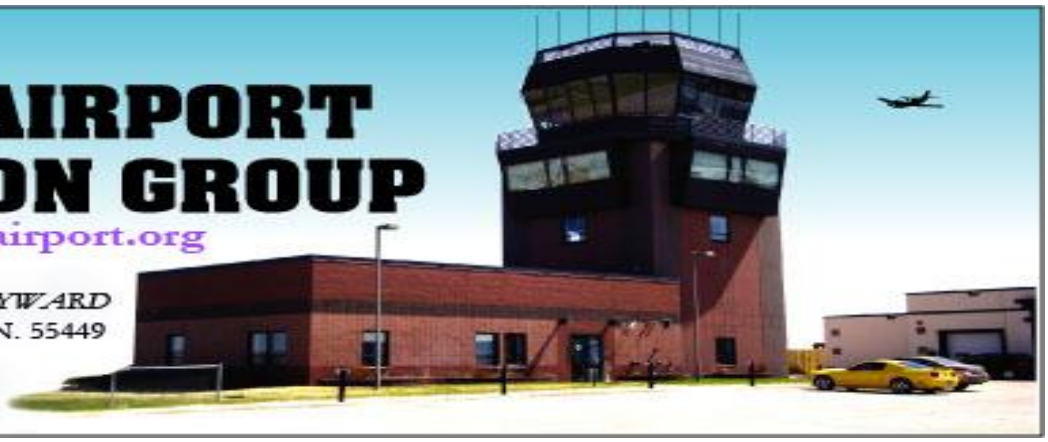
BLAINE AIRPORT PROMOTION GROUP

www.aneairport.org

TAKING YOUR AMBITIONS SKYWARD
8891 Airport Road C-2, Blaine MN. 55449



THE EDUCATION COORDINATOR JANUARY 10, 2013

SWALLOWTAIL butterflies have been the subject of study in development of Aerospace and solar energy.

Photos by: Award winning photographer, INGO ARNDT

Our natural world continues to reveal valuable clues in how we can use and manage the resources found on earth.

A Vanguard rocket placed the first orbital object into space that contained a series of small solar panels that powered a tracking device for a short time. The Vanguard Satellite is still in orbit and will turn 55 years old on March 17, 2013.

By 1990 contaminated air in the cabin and space capsule living quarters had been cleaned by use of catalytic converters that could remove the emissions and then recirculate the air safely. The catalytic converter was then adapted to industrial and automotive emissions control.

In March of 2012 a scientist presented a paper at the 243rd American Chemical Society's National Meeting and Exposition, held in San Diego, California. The subject of his paper is significant for it shows how to develop materials by studying microscopic images of the wing of a butterfly and producing large scale models for further research.

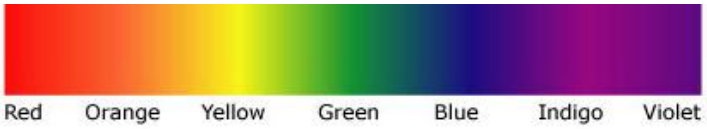
The question of how a butterfly can maneuver so quickly and stay warm may have been of interest to the scientist. ***Dr.Tongxiang Fan*** is a materials scientist and has done ground breaking studies in Functional Ceramics, Bio-inspired Materials, and Bio-mimetic Materials. The study of butterfly wings revealed patterns in the wing structure that mimic shingles on a house roof. On each shingle there are patterns of open holes that have walls that reflect to receive long wavelengths of light and allow shorter wavelengths to filter through to the membrane below. ***Dr. Fan*** built solar panels that mimic the butterfly wing structure and created greater energy output.

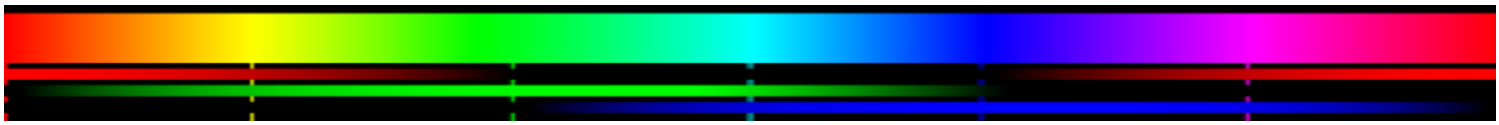
There are many wavelengths of light in the color spectrum that humans cannot see. There are some that are too short to see. This wavelength is "Ultraviolet" light. The wavelength that is too long to see is called "Infrared" light. Humans can see wavelengths of 400-700 nanometers or a color range of red through violet. Long wavelengths of Infrared light radiate heat, we cannot see it, but we can feel it. Stand close to a stove or camp fire and you will experience Infrared light.

By combining titanium dioxide using their model with platinum nanoparticles the researchers were able to boost their output capacity and to separate water molecules. The result was a large increase in hydrogen gas produced from water. Hydrogen is a renewable energy source produced from water and light.

This form of renewable energy is being further studied for potential in propulsion, in sterilization of medical instruments, more efficient catalytic converters developed from lighter weight material, and creating more efficient air purification systems for all forms of housing and transportation needs. The butterfly wing surface is also of interest for aircraft surfaces, structure, air purification, and water proofing.

The butterfly technology is a new discovery that will renew the work that has gone on before in the pioneering of space exploration, and hundreds of other Aerospace and industrial applications.





A nanometer (one billionth of a meter) is a unit of measure to specify wavelength of electromagnetic radiation of visible light ranges around 400 and 700 nm (nanometers). ***Red*** at the left of the color spectrum on page one, has the longest wavelength of 650 (nm) in our visible color spectrum. ***Orange, Yellow, Green, Blue*** progressively have shorter wavelengths and greater radiation. ***Violet*** has the shortest wavelength of 400 (nm) and greatest energy radiation. The human eye is not capable of detecting radiation of wavelengths outside the visible spectrum

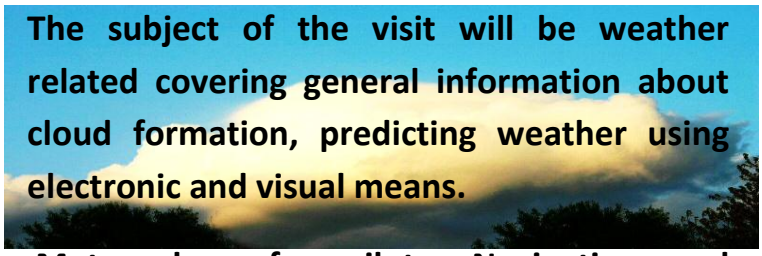
On each end of the visible spectrum are wavelengths that are outside the visible capability of the human eye. The wavelengths outside the ***red color*** are longer and produce less radiation as they become longer in length. These are ***Infrared radiation, Microwaves, and Radio waves. Infrared thermal radiation*** is emitted by objects near room temperatures. The existence of infrared radiation was discovered in 1800 by astronomer William Herschel. Infrared light is used in industrial, scientific, and medical applications. Infrared imaging cameras are used to detect heat lose in buildings and other insulated systems, detection of overheating of equipment, and even observe blood flow in medical applications. In astronomy, telescopes using infrared wavelengths can observe objects that are blocked by clouds and dust.

The wavelengths beyond the ***violet color*** produce greater radiation and have shorter wavelengths as they progress as, ***Ultraviolet Radiation, X-ray, and Gama-rays.*** These wavelengths are invisible to humans, but a number of insects and birds have the ability to see in these light emitting frequencies.

Ultraviolet radiation is blocked by the ozone layer but about 3% of this radiation is filtered through providing the formation of vitamin D, but also is capable of causing long term skin damage. The discovery by Physicist, Victor Schumann in 1893 of radiation below 200 nm provided understanding of the effects of exposure on industrial products such as painted surfaces, plastics, and erosion of metal surfaces. Sun Screen products and other medical treatments were developed through these pioneering scientific breakthroughs.

White light is a mixture of the colors of the visible spectrum. ***Black*** is a total absence of light. ***The Sun*** is the greatest source of energy and produces the entire electromagnetic spectrum of radiation energy.

January 2013 BAPG schedule will include a visit by over 80 students from the University Avenue Elementary School. Date and times for the visit will be announced.



Meteorology for pilots, Navigation and Landing Equipment, Weather Sky Watch and Drug Free Live; are spoken here.

A visit to the airport was made by field coordinators from the Centennial School of the Lexington School District on December 20, 2012

Harvey Karth has been coordinating efforts to encourage participation with the school district for the past year. Harvey provided insite of the prospect of future Aerospace growth and economical impact data related to our own airport and surrounding community. Civil Air Patrol Associate, Second Lieutenant, Kim Huso attended as our Education Coordinator for CAP. CAP provides material to teachers who are aerospace education members of CAP. The ACE program is designed for K-6. Through the AEX program, Teachers present six aerospace-related activities, using either books provided by CAP or the instructors own lesson plan. Students engage in special two-hour aerospace activity, taking an aerospace-related field trip or participateing in other aerospace-oriented activities. Roger Hansen participated in the discussions by presenting a variety of graphic panels that represent the previous workshops that the Blaine Airport Promotion Group conducted over the past two years.

Civil Air Patrol's ACE Program

Aerospace Connections in Education