

7 April 2017

2017 Alabama Science and Engineering Fair (ASEF) Special Awards in Optics and Photonics

The Huntsville Electro-Optical Society (HEOS) was able to award over \$900 in scholarships at the 2017 Alabama Science and Engineering Fair (ASEF) for Special Awards in optics and photonics related projects. The award funding was generously provided by SPIE, NASA, and HEOS. HEOS would like to thank all the volunteer judges for taking the time out of their schedules to participate in this event. The volunteer judges for this year were:

Bill Decker – Defense Acquisition Center
Ron Eng – NASA MSFC
Mark Stahl – NASA MSFC
Phil Stahl – NASA MSFC

These judges were responsible for evaluating the merit and application of photonics in the science fair entries. All winners received SPIE or HEOS certificates and award scholarships. HEOS is greatly appreciative of the opportunity to help inspire the nation's future scientists and engineers. HEOS is about community and our optics community only works with continued dedication and participation of our membership.

SPIE Awards



Senior Division Awards

First Prize (\$250) – Sophie Guo

“Gold Nanodisk Plasmonic Biochemical Sensor for Food Safety Monitoring”

11th grade, James Clemens High School, Madison

Sponsor Carol Bohatch (ESSS-454)

Second Prize (\$150) – Tucker Edison Honeycutt, “Astronomical Image Processing”

10th grade, Covenant Christian Academy, Harvest

Sponsor Rhonda Lisauckis (PH-555)

Third Prize (\$100) – Catherine Blevins

“Interpreting Light: Exploring the Emission Spectrum”

9th grade, Decatur Presbyterian Church School

Sponsor Abigail Blevins (PH-553)

Junior Division Awards

First Prize (\$150) – Hannah Patterson, “Algebraic Hot Spots”

8th grade, Clark Shaw magnet Middle School, Sponsor Kathy Irby (X-130)

Second Prize (\$100) – Andrew Crocker, “Stealthy Shapes”

5th grade, Rainbow Elementary School, Madison, Sponsor Teresa Shurtz (Z-194)

Third Prize (\$50) – Javon Zion Jennings

“Solar Revolution: Using the Sun for a More Efficient Solar Cooker”

6th grade, Key Destiny Academy, Huntsville Sponsor Keelan Jennings (N-083)

Senior Division Awards



Gold Nanodisk Plasmonic Biochemical Sensor for Food Safety Monitoring

ABSTRACT
A gold nanodisk array sensor was fabricated in a planar mode by using the electron beam lithography. The sensor was designed to detect the presence of aflatoxin B₁ (AFB₁) in a food sample. The sensor was tested by using a series of AFB₁ solutions with different concentrations. The results showed that the sensor could detect AFB₁ with a sensitivity of 10⁻¹⁰ M. The sensor was also tested by using a series of AFB₁ solutions with different concentrations. The results showed that the sensor could detect AFB₁ with a sensitivity of 10⁻¹⁰ M.

EXPERIMENT AND RESULTS
Gold Nanodisk Array Device
Functionalization of Gold Nanodisks
Localized Surface Plasmon Resonance Measurement

MEASUREMENT DATA & RESULTS

CONCLUSION

The poster includes several micrographs showing the gold nanodisk array device and graphs of the localized surface plasmon resonance measurement results. A small blue device and a red box are placed on the table in front of the poster.

Astronomical Image Processing

A Novel Application of Image Processing Aimed at Asteroid Detection

Abstract
Introduction
Method Overview
Project Goal
Data Sets
Processes
Results
Conclusion

The poster displays a series of astronomical images and processing results, including a map of the sky and several 3D surface plots. A blue ribbon award is placed on the table in front of the poster.

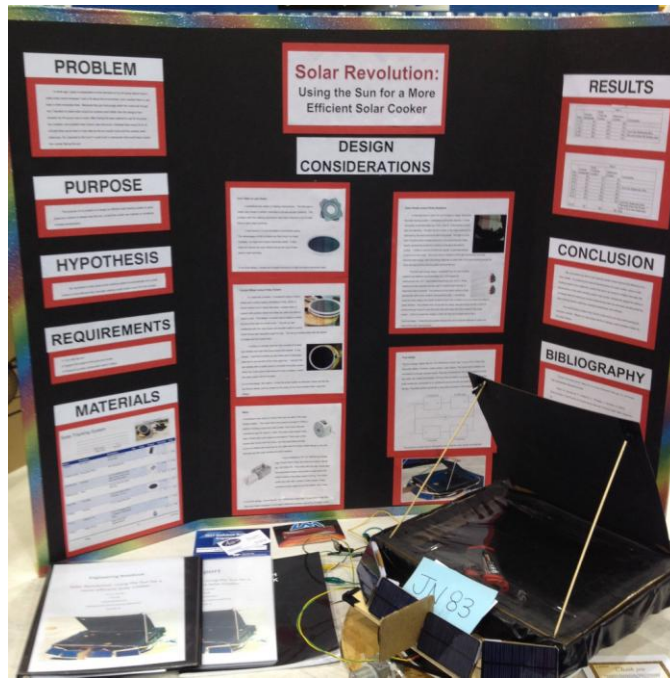
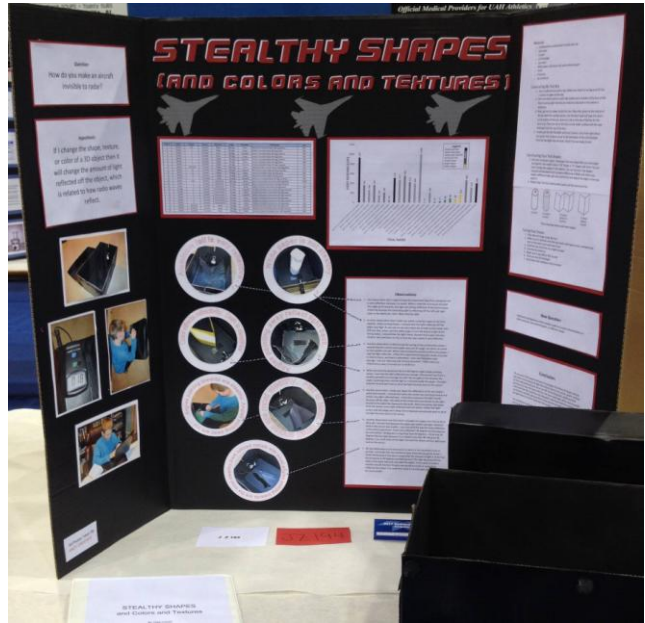
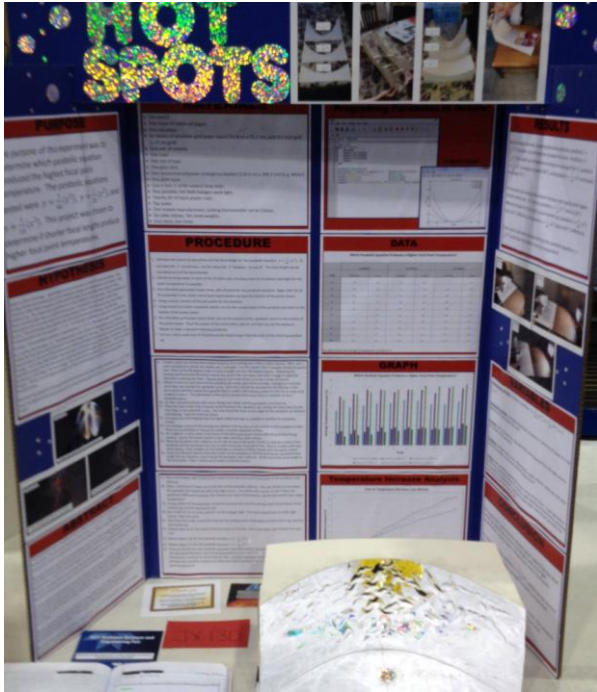
Exploring the Emission Spectrum

Abstract
Procedure
Results & Conclusion

Sodium Chloride
Lithium Chloride
Control Sample
Calcium Chloride
Barium Chloride
Strontium Chloride

The poster features a central section with text and several smaller panels showing emission spectra for different salts. The spectra are labeled with letters 'a' through 'f'.

Junior Division Awards



HEOS Awards

Junior Division Awards

First Prize (\$100) – Zachary Nameniuk

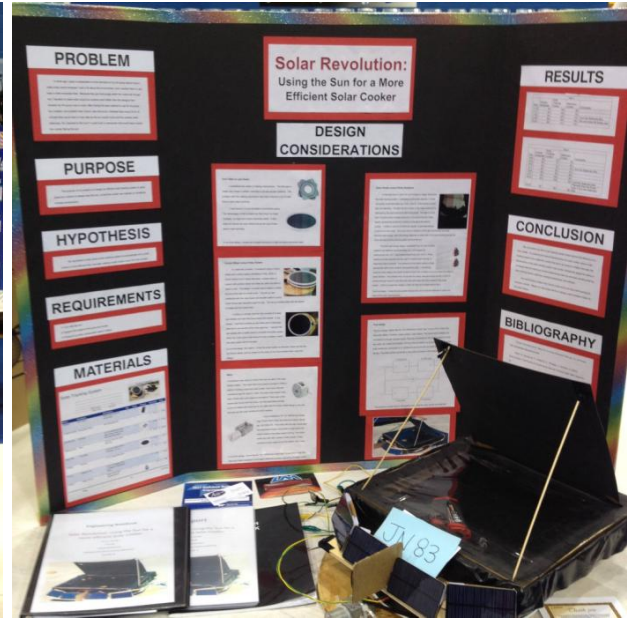
“Dye’n for Blue”

8th grade, Clark Shaw magnet Middle School, Sponsor Kathy Irby (ME-165)

Second Prize (\$50) – Javon Zion Jennings

“Solar Revolution: Using the Sun for a More Efficient Solar Cooker”

6th grade, Key Destiny Academy, Huntsville Sponsor Keelan Jennings (N-083)



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