



AUBURN UNIVERSITY

COLLEGE OF SCIENCES
AND MATHEMATICS

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Engaging More Community Connections

A Science and Math Outreach Newsletter

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Upcoming Events & Programs:

SUMMER SCIENCE CAMPS!

Register Today...

Schedule of Events

- May 31—June 3—Science Matters
- June 6—10—Science Matters
- June 20—23—Summer YES Camp
- June 20—24—Science Matters
- June 27-30—Summer YES Camp
- June 27—July 1—Science Matters
- July 11—15—Science Matters
- July 20—23—BEST National Conference
- July 25—29—Science Matters
- August 1-5—Science Matters

The College of Sciences and Mathematics will host two Summer Youth Experiences in Science (YES) camps this year—**June 20-23** and **June 27-30**—for rising 7th—9th grade students (students currently in 6th—8th).



Summer YES is a great opportunity for students to explore the many wonders of science by participating in hands-on experiments related to Chemistry, Electronics, River Creatures, Biotechnology, Nanotechnology, and much more. Students can choose a half-day, full-day or residential option. Summer YES was the only middle school camp in the state of Alabama to be featured in the national publication, "The Ultimate Guide to Summer Opportunities for Teens," in 2008. Registration and course information is available on our website.

Register now for Summer programs to receive the largest discounts!

Early bird dates:

May 6—Science Matters

May 20—Summer YES

2011 Course Offerings

June 20-23

| |
|-------------------|
| Microbe Mission |
| Create Your World |
| Krashers |
| Art in Science |

June 27-30

| |
|------------------------------------|
| River Creatures |
| Soakin' Skyrockets |
| Electronics |
| NanoScience |
| Genes, Diseases, and Biotechnology |
| Off the Wall Science |

 = morning courses (8:30—11:30am)

 = afternoon courses (1:30—4:30pm)

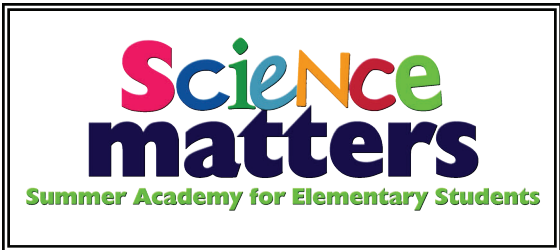
Please visit our website for a complete listing of all our programs!

www.auburn.edu/cosam/outreach

Register by **May 20** to receive discounted pricing. For more information, contact us at COSAM_Outreach@auburn.edu or by phone at (334) 844-7449 or visit our website. www.auburn.edu/cosam/outreach

Upcoming Events & Programs, cont'd:

Science Matters



Science Matters is a summer science academy program at the Auburn University main campus for elementary students in grades 1-6 that offers youngsters a supercharged science experience. The program allows participants to explore the world of science through real experiments, fantastic field trips, technology and art projects, integrated language arts, and hands-on, make-n-take activities.

Science Matters offers seven different science-themed weeks (four weeks for 1-2 graders). Your child can delight in as many weeks as they

like! Parents can choose between the Regular Day option from 8 am - 3:30 pm daily or the Extended Day option from 8 am - 5 pm daily.

Program Fees Include (Prices range from \$170 –\$235 per week/child):

- All materials for courses—Fantastic field-trips each week—First-class experienced instructors and staff—All snacks (morning and afternoon breaks) - Special Science Matters academy T-shirt—Science Matters string backpack—Certificate of Achievement—Lots of Make-n-Take projects

Spaces are limited each week and are filled on a first come, first served basis. Multiple week discounts are available.

Science Matters – Summer 2011 Schedule and Course Topics

Courses in ORANGE are full.

| Week | 1st – 2nd grade | 3rd-4th grade | 5th-6th grade |
|------------------|-------------------|----------------------|-----------------------|
| May 31 – June 1* | My Big Backyard | Invent It, Build It! | Fur and Feathers |
| June 6-10 | Up, Up & Away | Fancy Fuel | Hogwarts I |
| June 20-24 | Creature Features | Farm to Food | Ocean Explorers |
| June 27-July 1 | Science Stew | LEGO-Mania! | Toy Science |
| July 11-15 | X | To Catch a Thief | Animation Creations |
| July 25-29 | X | Slimy Science | Race to the Sun |
| Aug 1-5 | X | The Biology of ME! | Egg-cellent Adventure |

Waiting lists will be kept for full courses. Register by May 6 to receive a discounted price. To register, visit www.auburn.edu/cosam/outreach or call 334-844-7449.



For up-to-date program information from the COSAM Outreach Office, sign up for our listserv, AU4kids. To become a member, send an e-mail to cosam_outreach@auburn.edu

Experiment of the Issue

Taco Sauce Penny Cleaner from Steve Spangler Science

Materials Needed:

- Dirty pennies (try to collect tarnished pennies that all look the same)
- Taco sauce (mild sauce from Taco Bell works well)
- Vinegar
- Tomato paste
- Salt
- Water
- Small plates



Procedure...

1. Let's start by proving that taco sauce does a good job of cleaning pennies. Place several tarnished pennies on a plate and cover them with taco sauce. Use your fingers to smear the taco sauce all over the surface of the pennies. Remember to wash your hands... and don't lick your fingers (pennies are really dirty and some taco sauces are really spicy!)
2. Allow the taco sauce to sit on the pennies for at least two minutes.
3. (cont. below)

Procedure (cont.)...

3. Rinse the pennies in the sink and look at the difference between the top side of the pennies that touched the taco sauce and the bottom side. It's no myth... taco sauce does the trick.

So, which ingredients are responsible for the cleaning power of taco sauce? Let's find out...

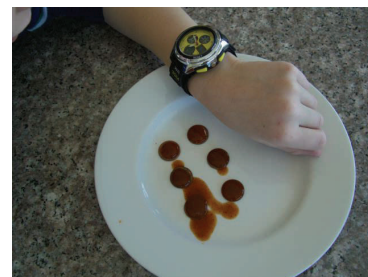
1. Place two or three equally tarnished pennies on each of four plates. Use masking tape or a sticky note to mark each plate with the ingredient you are testing (vinegar, tomato paste, salt, and water).
2. Cover the pennies with the various ingredients and allow them to sit for at least two minutes.
3. Rinse the pennies from each test plate with water. Which ingredient cleaned the pennies the best?

Much to our surprise, none of the ingredients did a good job of cleaning the dirty pennies. In fact, the results were terrible. Where did we go wrong? Maybe two or more of the ingredients work together to react against the copper oxide on the penny. This assumption helped set up our second test using various combinations of tomato paste, vinegar and salt.

1. Place two or three equally tarnished pennies on each of three plates. Make three signs that say "Tomato Paste + Vinegar," "Salt + Vinegar," and "Tomato Paste + Salt."
2. Cover the pennies with each of the mixtures and give the ingredients at least two minutes to react.
3. Rinse the pennies under water and write down your observations.

Observations....

Parents, the Taco Sauce Penny Cleaner is a great example of a Science Fair project. First, you ask a question - does taco sauce really clean pennies? You find that it does and then you ask another question - What is it in the taco sauce that causes it to clean pennies? You run multiple tests and isolate one variable at a time to see if the vinegar, the tomato paste, the salt, or the water is the real cleaning agent for the pennies. Guess what... nothing cleans the penny. Now what do you do? You ask another question - Could a combination of ingredients cause the cleaning action? Again, you isolate the variables to eventually reach the conclusion that the combination of the vinegar and salt cleans the pennies. The Taco Sauce Penny Cleaner experiment clearly shows scientific inquiry in motion.





Taco Sauce Penny Cleaner (cont.)

How does it work....The clear winner is the mixture of vinegar and salt. Neither vinegar nor salt by themselves cleaned the pennies, but when they were mixed together something happened. The chemistry behind the reaction is somewhat complicated but very interesting. Dr. Laurence D. Rosenhein from the Department of Chemistry at Indiana State University published an article in the Journal of Chemical Education in 2001 about this very reaction. According to Dr. Rosenhein, salt (sodium chloride) plays a very important role in making a copper chloride complex. Salt breaks down into sodium ions and chloride ions and it is the chloride ions that form a surprising complex with the copper ions (specifically the Cu⁺¹). It is also well known that a mixture of lemon juice and salt does a good job in removing tarnish from metals and works very well on pennies. By themselves, the salt and weak acid do very little in the way of removing the coating of copper oxide on the penny, but together these ingredients make a great cleaning agent. Now you know the cleaning power of taco sauce!



Since Last Issue...AU Explore Open House

AU Explore is COSAM's annual Open House Day for middle school students. Approximately 1300 5th– 8th grade students from Alabama and Georgia participated in this year's event, which occurred on Friday, April 29. Students experienced live birds of prey, reptiles, and insects up close, interacted with University faculty and students at the Science and Math EXPOs, built motors and dissected sheep eyes at the Science Fun Shops, and watched the science of glass blowing in the Glass Blowing Science demo show.



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Visit our YouTube channel!! New videos will be updated following outreach programs.

www.youtube.com/AUCOSAMOutreach

Keep up to date with programs and information by visiting:
www.auburn.edu/cosam/outreach