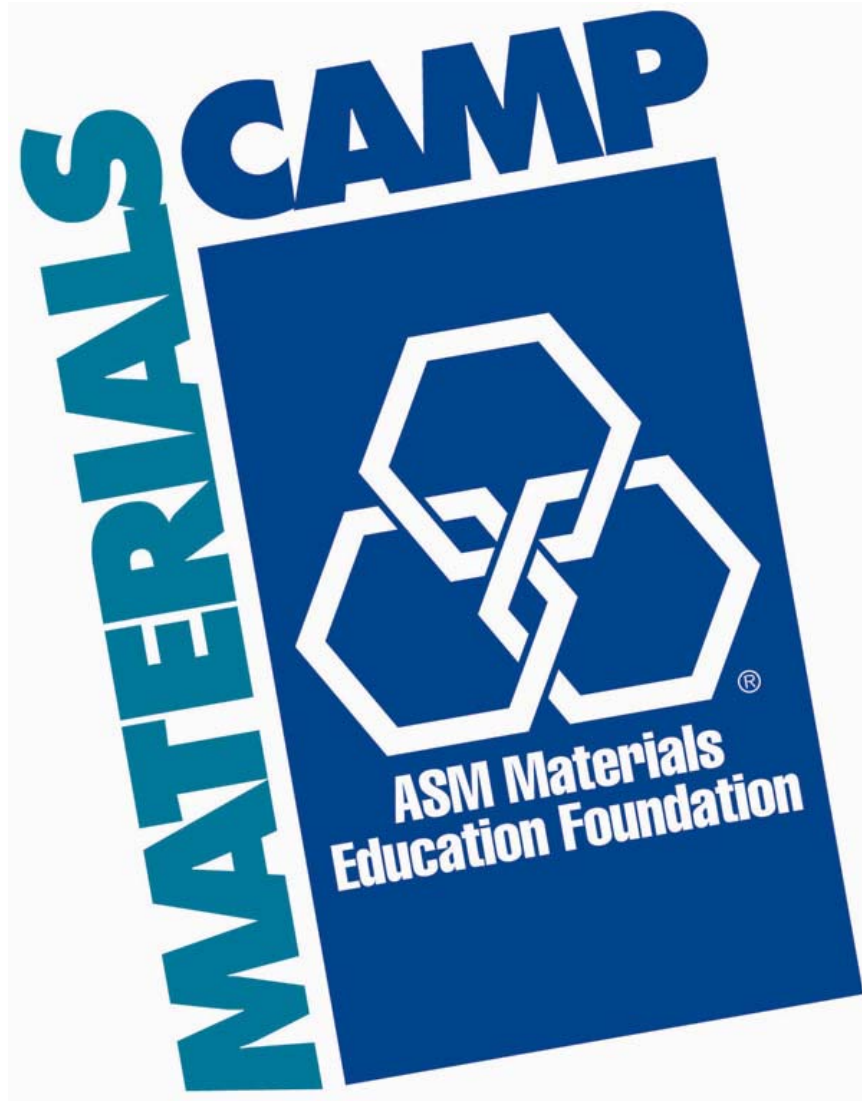


# ASM Materials Camp® -Teachers



**June 14-18, 2010**

**Case Western Reserve University**

---

## Organizers and Contributors

ASM Cleveland Chapter

Sunniva Collins  
*Swagelok Company*  
*Materials Camp Lead Organizer*

Heather Watson  
*Alcoa*

Alex Derkaschenko  
Joseph Radisek  
*Eaton Aerospace Laboratories*

Kristina Collins  
*Material Girl*

Master Teachers

Beth Eddy  
*Westerville High School*

Thomas K. Glasgow, FASM  
*NASA Glenn [R]*

Todd Bolenbaugh  
*Tolles Career & Technical Center*

Case Western Reserve University

Prof. Jim McGuffin-Cawley  
*Department Chair, Materials Science and Engineering*

Dr. Mirko Antloga

Prof. Mark DeGuire

Patsy Harris

Dr. Wayne Jennings

Prof. Gary Michal

Rich Miller

Dr. David Schwam

Chris Tuma

University of Akron

Prof. Joe Payer

ASM Materials Education Foundation

Charles Hayes  
*Executive Director*

Pergentina Deatherage  
*Administrator, Foundation Programs*

Virginia Shirk  
*Administrative Assistant*

## About the ASM Materials Camp<sup>®</sup>—Teachers Program

ASM Materials Camp—Teachers is a proven program that strengthens the curriculum in Science, Technology, Engineering and Mathematics (STEM) at the secondary level. By introducing teachers to the engineering professions through Materials Science, we influence students for years to come. Materials Science excites students' interest because the student has everyday, hands-on experience with materials. Thus, materials topics are great motivators in any engineering, technology or science course. Materials are also a very important and an integral part of the manufacturing process.

This international program is offered by the ASM Materials Education Foundation, in fulfillment of its Mission: "To excite young people in materials, science, and engineering careers." Since 2002, ASM Materials Camps have introduced thousands of high school teachers to hands-on learning about the role of materials in our daily lives. These week-long professional development workshops are held on college campuses throughout the United States during the summer. For teachers, this is an excellent opportunity to re-visit science principles, do experiments and bring new lessons into the classroom.

The program is based on past experiences in the areas of curriculum development, teacher training and student programs in Materials Science developed at the University of Washington and Edmonds Community College and supported by the National Science Foundation's Advanced Technology Education program. These programs have demonstrated that Materials Science is an excellent tool to bring together academic and vocational instructors in a common goal of exciting students about science, technology and engineering.

During this one-week workshop, teacher participants learn the basics of Materials Science Technology (MST) as taught at the high school level. They work hands-on with metals, ceramics, polymers and composites, and develop a greater appreciation for the importance of these materials to modern life. The teachers see how this heavily project-based course excites students to learn science concepts as they complete projects of personal worth to them. Whether teachers use the information and concepts as a basis for teaching their own MST course or merely infuse the concepts into an existing science course to increase relevancy, they finish the week prepared to make some important instructional changes as a result of their participation.

The camp is FREE for the Teacher attendees. For their participation, they receive 4 Continuing Education Units (CEU's); they can also opt for 2 graduate level credits. They are also provided with curricular tools in both digital (CD ROM) format and print; all the supplies needed to enable replication of all classroom activities at home; a one-year membership in ASM International; and access to the time and talents of numerous local engineers and scientists.

---

## ASM Materials Camp® -Teachers, Cleveland

Sat/Sun, June 12/13			
		Master Teachers arrive <ul style="list-style-type: none"> <li>• Meet with organizer/s &amp; lab technician/engineer</li> <li>• Set-up</li> </ul>	
Monday, June 14			
8:00 AM	<b>3<sup>rd</sup> Floor Foyer White Bldg.</b>	<b>Registration</b> <ul style="list-style-type: none"> <li>• Check attendance against roster</li> </ul>	Organizers/Master Teachers
8:30 AM	<b>White 411</b>	<b>Welcome</b>	Organizer / CWRU
8:45 AM	<b>White 411</b>	<b>Introductions</b>	Master Teachers
9:00 AM	<b>White 411</b>	<b>Intro Experiments – SOLIDS</b>	
10:00 AM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
10:15 AM		<b>SOLIDS</b>	
12:00 PM	<b>Nord 310</b>	<b>LUNCH</b>	<b>Presentation: Tuwhanna Lewis, CES; Roadshow</b>
1:00 PM		<b>SOLIDS</b>	
3:00 PM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
3:15 PM		<b>SOLIDS</b>	
5:00 PM		<b>Leave for home</b>	
Tuesday, June 15			
8:00 AM	<b>White 411</b>	<b>Greetings</b>	<b>Charles Hayes, Executive Director of ASM Foundation</b>
8:30 AM		<b>METALS</b>	
10:00 AM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
10:15 AM		<b>METALS</b>	
12:00 PM	<b>Nord 310</b>	<b>LUNCH</b>	<b>Presentation: Prof. Gary Michal, Materials in Sports</b>
1:00 PM		<b>METALS</b>	
3:00 PM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
3:15 PM		<b>METALS</b>	
4:00 PM		<b>DEPARTMENT LAB TOURS</b>	<b>Break into 3 groups:</b> <ul style="list-style-type: none"> <li>• <b>Corrosion Lab/Fuel Cell Lab</b></li> <li>• <b>Mechanical Testing Facility</b></li> <li>• <b>Swagelok Center for Surface Analysis of</b></li> </ul>

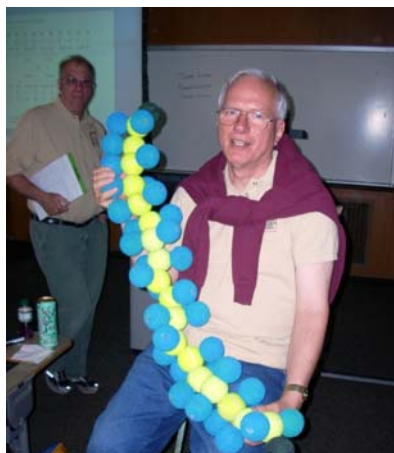
## ASM Materials Camp® -Teachers, Cleveland

			<b>Materials</b>
5:30 pm		Leave for home	
<b>Wednesday, June 16</b>			
8:30 AM		<b>CORROSION</b>	
10:00 AM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
10:15 AM		<b>CORROSION</b>	
12:00 PM	<b>Nord 310</b>	<b>LUNCH</b>	<b>Presentation: Prof. Joe Payer, University of Akron, Topics in Corrosion</b>
1:00 PM		<b>CERAMICS/GLASS</b>	
3:00 PM		<b>FIELD TRIP</b>	<b>PCC Airfoils, Renaissance Park 870 Renaissance Parkway Painesville, OH 44077</b>
6:00 PM		Leave for home	
<b>Thursday, June 17</b>			
8:30 AM		<b>POLYMERS</b>	
10:00 AM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
10:15 AM		<b>POLYMERS</b>	
12:00 PM	<b>Nord 310</b>	<b>LUNCH</b>	<b>Presentation: Fun with Polymers</b>
1:00 PM		<b>POLYMERS</b>	
3:00 PM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
3:15 PM		<b>POLYMERS</b>	
5:00 PM		Leave for home	
<b>Friday, June 18</b>			
8:30 AM		<b>COMPOSITES &amp; COMPLETION OF MAJOR PROJECTS</b>	
10:00 AM	<b>4<sup>th</sup> Floor Hallway White</b>	<b>BREAK</b>	
10:15 AM		<b>COMPOSITES &amp; COMPLETION OF MAJOR PROJECTS</b>	
1:00 PM	<b>Nord 310</b>	<b>GRADUATION LUNCH</b>	<b>PRESENTATION OF CERTIFICATES</b>
3:00 PM		Leave for home	

**MASTER TEACHERS**



**Elizabeth Eddy** has been teaching chemistry for 27 years and loving it! She was also a research chemist for Gulf Research & Development for five years. She has a B.S. in chemistry and an MEd. in science education. She especially enjoys teaching AP and IB chemistry and Materials Science, which is in its third year at Westerville South High School in Westerville, Ohio. This fall, Beth is looking forward to teaching central Ohio's first STEM Innovation class, a blend of AP Chemistry with Materials Science, which will be taught at OSU and for which the students will receive dual OSU and high school credit.



**Mr. Thomas K. Glasgow, FASM**, NASA Glenn Research Center [R]. As an employee of the Ohio Aerospace Institute, Tom Glasgow helped to define future generations of space launch vehicles. He is the author of numerous technical papers in the field of high temperature materials as well as a few patents. His research interests include powder metallurgy, ceramics, solidification science, space power, and technology transfer. A Fellow of ASM International, he is also fascinated by the history of technology.



**Todd Bolenbaugh** is a science teacher at Tolles Career & Technical Center in Plain City, Ohio. During his five years as a high school teacher, he has taught Chemistry, Physics, Environmental, Anatomy, and Integrated science. Todd has been using Material Science labs in his classroom for the last 4 years and his school just completed its first offering of Material Science in the spring of 2010.

## ASM Materials Camp® -Teachers, Cleveland

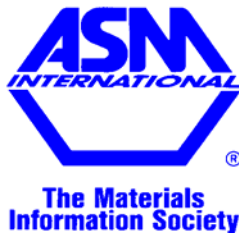
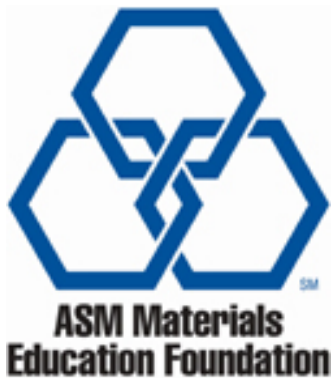
### TEACHER DELEGATES

First Name	Last Name	School District	School
Misbahuddin	Ahmed	Cleveland (CMSD)	James Ford Rhodes High School
Sylcilee	Barnes	Cleveland (CMSD)	Glenville High School
Charesha	Barrett	Cleveland (CMSD)	Miles Park Elementary / Case Elementary School
Gousia	Begum	Cleveland (CMSD)	John Adams High School
Andrew	Bruening	Strongsville	Strongsville High School
Anne	Budzik	Bay Village City School	Bay Middle School
Sunitha	Chiluka	Cleveland (CMSD)	John F Kennedy
Darlene	Clinkscales	Cleveland (CMSD)	SuccessTech Academy
Deidra	Davis	Cleveland (CMSD)	Martin Luther King Jr. Career Campus
Barbara	Dunagan	Painesville City Local Schools	Harvey High School
Don	Ginley	Polaris Career Center	Polaris Career Center
Paula	Hughes	Polaris Career Center	Polaris Career Center
Nicole	James-Jones	Cleveland (CMSD)	
Samiha	Iskander	Private	Beaumont
Santi	Kumari	Cleveland (CMSD)	John Adams High School
Victoria	Laymon	Cleveland (CMSD)	Entrepreneurship Preparatory Academy
Bob	Marquard	Private	University School
Jennifer	McGeown	Orange City Schools	Brady Middle School
Teresa	Morlock	Cleveland (CMSD)	Mary B Martin
Vanetta	Neal	Cleveland (CMSD)	Audubon
Rosemary	Nemeth	Private	Gesu School
Matthew	Norton	Private	Gross Schechter Day School
Rosemary	O'Toole-Hamman	Lorain City Schools	Early College High School
Joyce	Rice	Cleveland (CMSD)	Miles@Cranwood
Susan	Robertson	Solon City Schools	Orchard Middle School
Nelamangala	Satish	Cleveland (CMSD)	Collinwood High School
Meena	Sharma	Cleveland (CMSD)	Margaret Ireland @ Option Complex
Sundari	Sista	Cleveland (CMSD)	Glenville High School
Mya	Sullivan	Private	Laurel School
Karen	Turk	Cleveland (CMSD)	Lincoln-West High School
Michele	Verdi	Ashtabula Area City Schools	Lakeside High School
Elizabeth	Voit	Cleveland (CMSD)	Whitney M. Young School for Gifted/Talented Students
Sarah	Wickham	Cleveland (CMSD)	Entrepreneurship Preparatory School (Charter/Zealous Schools)

## Thanks to Our Sponsors

The following organizations generously provided resources to enable the success of the Cleveland Camp. We acknowledge and thank them for their assistance in this endeavor!

Swagelok®



ASM Cleveland Chapter

