

ASM Materials Camp® -Teachers



June 15-19, 2009

Case Western Reserve University

Organizers and Contributors

ASM Cleveland Chapter

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Swagelok Company
Materials Camp Lead Organizer

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ASM Cleveland Chapter Chair
2008-2009

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About the ASM Materials Camp®—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 13/14			
		Master Teachers arrive <ul style="list-style-type: none"> • Meet with organizer/s & lab technician/engineer • Set-up 	
Monday, June 15			
8:00 AM	3rd Floor Foyer White Bldg.	Registration <ul style="list-style-type: none"> • Check attendance against roster 	Organizers/Master Teachers
8:30 AM	White 411	Welcome	Organizer / CWRU
8:45 AM	White 411	Introductions	Master Teachers
9:00 AM	White 411	Intro Experiments – SOLIDS	
10:00 AM	4th Floor Hallway White	BREAK	
10:15 AM		SOLIDS	
12:00 PM	Nord 310	LUNCH	Presentation: Prof. Jim McGuffin-Cawley, Intro to Materials
1:00 PM		SOLIDS	
3:00 PM	4th Floor Hallway White	BREAK	
3:15 PM		SOLIDS	
5:00 PM		Leave for home	
Tuesday, June 16			
8:30 AM		METALS	
10:00 AM	4th Floor Hallway White	BREAK	
10:15 AM		METALS	
12:00 PM	Nord 310	LUNCH	Presentation: Prof. John Lewandowski, Topics in Metals and Mechanical Testing
1:00 PM		METALS	
3:00 PM	4th Floor Hallway White	BREAK	
3:15 PM		METALS	
4:00 PM		DEPARTMENT LAB TOURS	Break into 3 groups: <ul style="list-style-type: none"> • Fuel Cell Lab • Mechanical Testing Facility • Swagelok Center for Surface Analysis of Materials
5:30 pm		Leave for home	

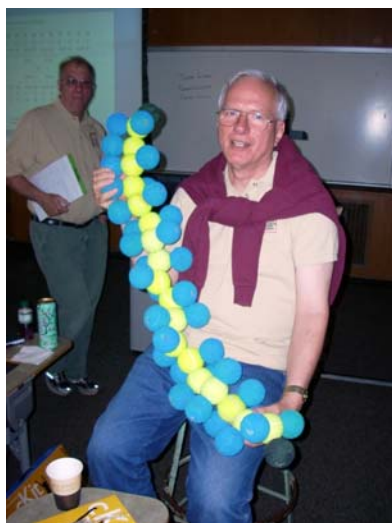
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Wednesday, June 17			
8:30 AM		POLYMERS	
10:00 AM	4th Floor Hallway White	BREAK	
10:15 AM		POLYMERS	
12:00 PM	Nord 310	LUNCH	Presentation: Prof. Stuart Rowan, History of Polymers
1:00 PM		POLYMERS	
3:00 PM	4th Floor Hallway White	BREAK	
3:15 PM		POLYMERS	
5:00 PM		Leave for home	
Thursday, June 18			
8:30 AM		CORROSION	
10:00 AM	4th Floor Hallway White	BREAK	
10:15 AM		CORROSION	
12:00 PM	Nord 310	LUNCH	Presentation: Prof. Joe Payer, Topics in Corrosion
1:00 PM		CERAMICS/GLASS	
3:00 PM		FIELD TRIP	PCC Airfoils, Renaissance Park 870 Renaissance Parkway Painesville, OH 44077
6:00 PM		Leave for home	
Friday, June 19			
8:30 AM		COMPOSITES & COMPLETION OF MAJOR PROJECTS	
10:00 AM	4th Floor Hallway White	BREAK	
10:15 AM		COMPOSITES & COMPLETION OF MAJOR PROJECTS	
1:00 PM	Nord 310	GRADUATION LUNCH	PRESENTATION OF CERTIFICATES
3:00 PM		Leave for home	

MASTER TEACHERS



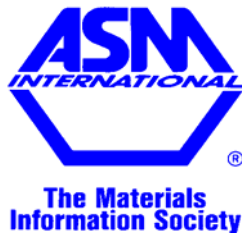
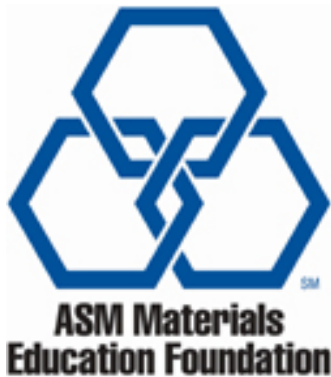
Ms. Pat Duda, Teacher, Cibola High School. Pat has a Masters in Analytical Chemistry and is a certified teacher in the Albuquerque Public Schools (APS). She has taught Chemistry I, Chemistry II, and the new Chemistry I – Materials Science as well as Pre-Engineering Electronics over the past eleven years. She attended and then helped teach the ASM Materials Camp – Teachers since 2003. After helping to write the new Chemistry I – Materials Science class curriculum in APS, she obtained grants, including a large RASEM² grant to assist seven APS teachers in five high schools to obtain equipment and materials for the new course. Along with several colleagues, Pat meet weekly for two years to develop, assess, and revise the Chemistry – Materials Science class laboratories and activities. Pat had taught night school chemistry in various post-secondary schools. She had also worked in industry as a chemist in various capacities including analyzing gasoline and oil samples, aquatic samples for heavy metals, and chemical waste for chromium as well as studying steam explosions.



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.

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!



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