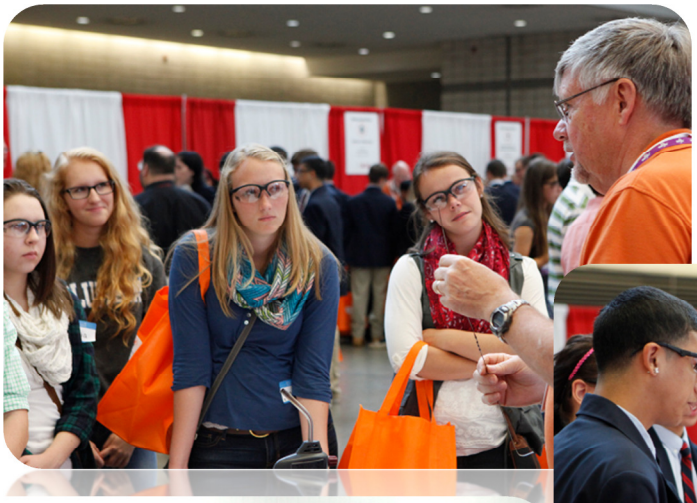
MATERIALS CAMP®

ASM MATERIALS EDUCATION FOUNDATION



ASM Mini-Materials Camp®

GUIDELINES

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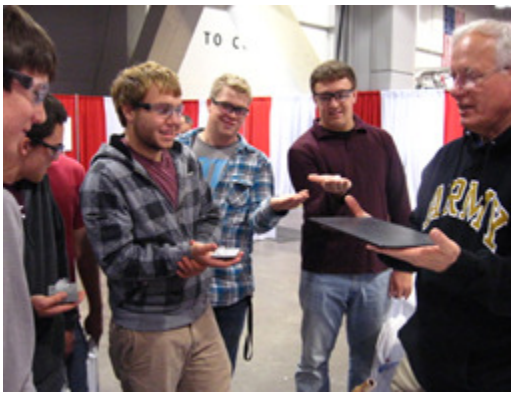
Typical Mini-Materials Camp – The Basics



1) Usually consists of four sessions.
2) Each session is 2 hours.

<u>Day 1</u>

9:00-11:00 (Session 1)
12:00 - 2:00 (Session 2)

<u>Day 2</u>

9:00-11:00 (Session 3)
12:00-2:00 (Session 4)

3) Recommend 8-10 demo / presentation stations; all presenters are volunteers.
4) Each session can accommodate up to 100 students – or up to 400 students for 2 days.
    a. If 8 stations, we'll have 12 to 13 students per station
    b. If 10 stations, 10 students per station
5) Demonstrations / experiments must only last 10-12 minutes (15 minutes maximum).
6) After 12-15 minutes, the groups rotate.
    a. Need to have a Timer assigned with a whistle to alert group to rotate.
7) This goes on for 2 hours; so basically, each presenter will do the same demo 6-8 times in one session.

<u>Volunteer Presenters</u>

1) Usually local ASM members – recruited by local organizing committee (if not ASM Chapter) and ASM Foundation staff.
2) It's good to involve the ASM local chapter in the organization of the mini-camp (if they are not already involved as the organizing committee). They are a good source of volunteers.
3) Up to 2 Master Teachers serve as presenters.

<u>Recruitment of Students</u>

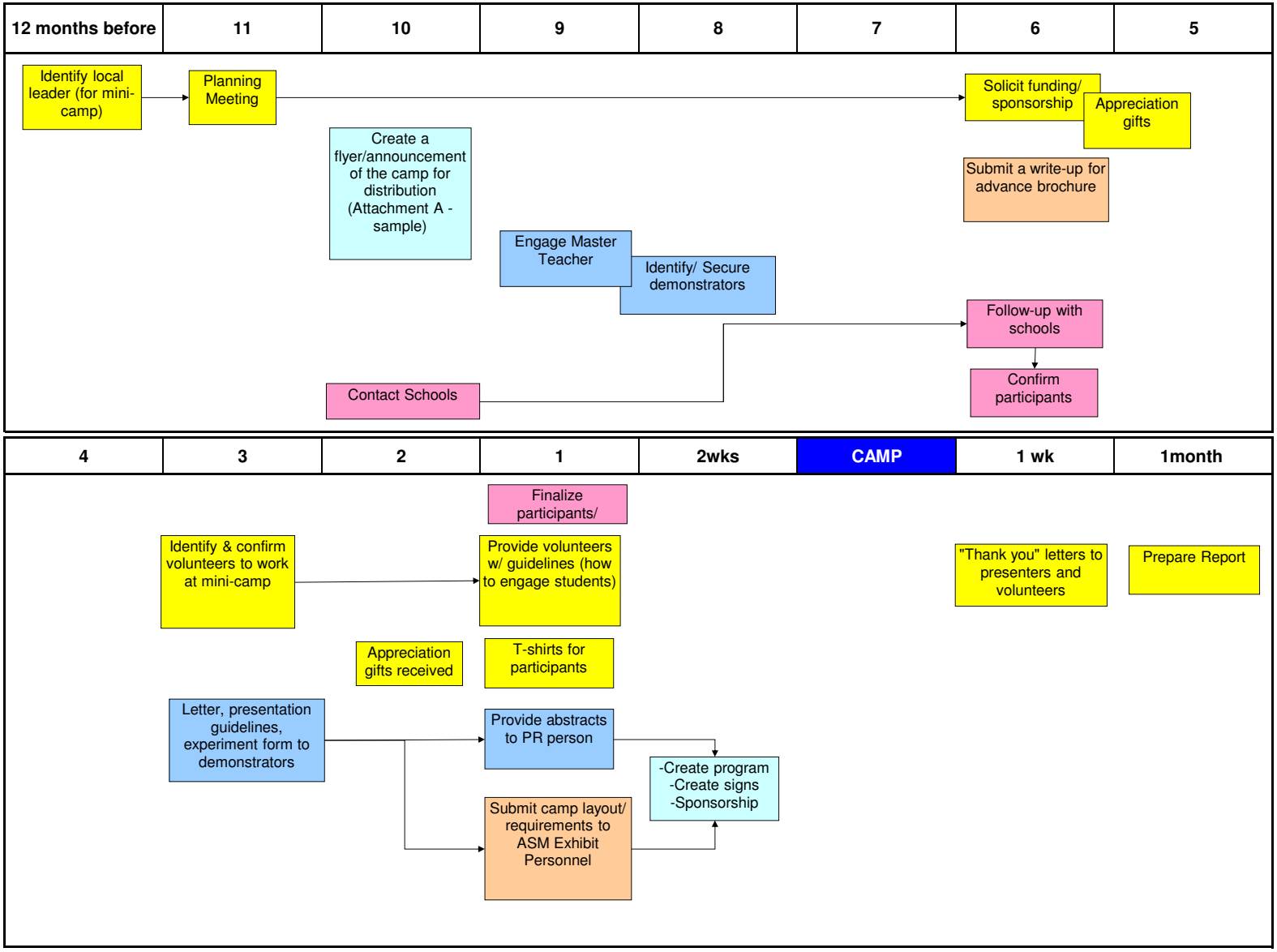
1) Send communication directly to teachers (past teachers camp participants from the area) – invite them to bring their class on a "fieldtrip" to the mini-camp.
2) Communicate to all science coordinators.
3) School superintendents
4) Etc.
5) Recruitment flyer samples in the book.

<u>Mini-Camp Schematic Diagram / Layout</u>

See Table of Contents

<u>Budget</u> – See Table of Contents

TIMELINE


12 months before
11
10
9
8
7
6
5
Identify local leader (for mini-camp)
Planning Meeting
Solicit funding/ sponsorship
Appreciation gifts
Create a flyer/announcement of the camp for distribution (Attachment A - sample)
Submit a write-up for advance brochure
Engage Master Teacher
Identify/ Secure demonstrators
Follow-up with schools
Confirm participants
Contact Schools
4
3
2
1
2wks
CAMP
1 wk
1month
Finalize participants/
Identify & confirm volunteers to work at mini-camp
Provide volunteers w/ guidelines (how to engage students)
"Thank you" letters to presenters and volunteers
Prepare Report
Appreciation gifts received
T-shirts for participants
Letter, presentation guidelines, experiment form to demonstrators
Provide abstracts to PR person
-Create program
-Create signs
-Sponsorship
Submit camp layout/ requirements to ASM Exhibit Personnel

Tasks		Timeline	Responsible
Identify local leader (for mini-camp)		1 year prior to camp	Chapter Chair
Planning Meeting			
	Organizers conduct a planning meeting - physical meeting or email or teleconference	11 months prior to camp	Mini-camp Leader
	Identify committee members	11 months prior to camp	Mini-camp Leader
Publicity & Recruitment			
	Create a flyer/announcement of the camp for distribution	10 months prior to camp	PR Person
	Contact schools -- science & math departments, administrators & counselors - personal visits or phone calls and/or email	10 months prior to camp	School Relations/Recruitment
	Submit a blurb/copy of Materials Camp to ASM Marketing for inclusion in the Advance Brochure	6 months prior to camp	Foundation Staff
	Follow-up with schools -- get commitment, estimated number of students/teachers (suggest to over-recruit!)	6 months prior to camp	School Relations/Recruitment
	Confirm number of students/teachers	6 months prior to camp	School Relations/Recruitment
	Finalize number of students/teachers	1 month prior to camp	School Relations/Recruitment
	Create program	2 weeks before camp	PR Person
	Create signs for each experiment/station	2 weeks before camp	PR Person
	Create signs for sponsorships	2 weeks before camp	PR Person
Demonstrators/Presenters			
	Identify and secure 8-9 demonstrators / presenters	8 months prior to camp	Mentors Recruiter
	Letter, presentation guidelines & Experiment Form sent to demonstrators (samples attached)	3 months prior to camp	Mentors Recruiter
	On-going communications between organizers and presenters - confirm & re-confirm participation, details, etc.	from initial contact to camp date	
	Gather abstracts from Experiment Form received and give to PR Person	1 month prior to camp	
	Engage at least one Master Teacher (get name & contact info from ASM Foundation)	9 months prior to camp date	Mentors Recruiter
Volunteers			
	Identify & confirm volunteers to work during camp (Sample of Volunteer Grid during the camp provided)	3 months before camp	Mini-camp chair
	Provide guidelines and questions; i.e. how to engage students	1 month prior to camp	Mini-camp chair
Mini-Camp Set-Up / Layout			
	Submit camp layout and requirements to ASM Exhibit personnel (see layout used in previous Mini-Camps; proven to work perfectly)	1 month prior to camp	Foundation staff
Sponsorship			
	Solicit funding/sponsorships from local industries	6 months prior to camp	Mini-camp Chair
	Mini-Materials Camp partners; i.e. AIST, TMS, MRS	6 months prior to camp	Mini-camp Chair
	T-shirts for distribution to all participants -- students, volunteers, presenters, teachers	1 month prior to camp	Mini-camp Chair
	Appreciation gifts (gifts for mentors)	2 months prior to camp	Mini-camp Chair
Other			
	Send "thank you" notes to presenters and volunteers (See sample)	1 week after camp	Mini-camp chair
	Summary/Report to ASM Foundation -- to include actual count of participants (students & teachers)	1 month after camp	Mini-camp chair
	Camp Budget		Mini-camp chair

Other Logistical Details

1) Bus drop off -- provide this info to school contacts

2) Registration area -- Set this up outside the exhibit hall. That's where participants pick up their badges to enter the exhibit hall.

This may not be necessary if we send badges ahead of time; we just use 2 x 2 labels -- with the event name printed on them.

3) If camp has 9 stations/experiments (per example), group will be divided into 9 groups (9 groups each session)
4) Each presentation/experiment will run for 10-12 minutes, and once the timer goes off, each group will rotate/move to the next experiment on the right.
5) Plan is that each group will experience all presentations/experiments during the 2-hour period.

Quick Tips

1) Whistle to move group along
2) With each group have a guide to answer questions along the way or teacher accompanying
3) Wear comfortable shoes
4) Put mats behind the tables for the presenters to stand on (mini-camp area is not carpeted)
5) Provide lunches for presenters and volunteers (box lunches delivered to the camp area; saves time)
7) Have water bottles available for presenters/volunteers
8) Provide list of experiments for teachers after or before
9) Have a Master Teacher "open" and "close" each session.

Flyer / Announcement (Sample)

[NAME OF EVENT] Materials Mini-Camp®

Touch, Smell and See the Exciting Science of Materials!

Share the excitement with your students at the Materials Mini-Camp® at the _____ on _____! Session times are 9:00 to 11:00 AM and Noon to 2:00 PM each day.

High school students and teachers in the local high schools are invited to come and touch, smell and see the exciting application of materials in consumer products presented by teams of materials science engineers.

Our goal is to introduce high school students with an interest in engineering, including chemistry, physics, mathematics and computer science to a career in materials science engineering. The demand for material science engineers is strong now and in the future. Industries such as energy, biomedical, aerospace and automotive rely heavily on materials engineers for researching and processing of their products.

Presenters include:

(PROVIDE LIST HERE)

Encourage a class to attend and then stop by to watch the fun!

If you have questions, please contact:

CONTACT INFORMATION
HERE – name, address, phone, email

Letter to Schools (Sample)

(DATE)

Dear Teacher,

On (DATE/S), the ASM (LOCAL CHAPTER) will be hosting the Materials Mini-Camp at the _____. We would like to invite you and your students to this wonderful opportunity to learn more about materials science and engineering.

At the Materials Mini-Camp, students will have the opportunity to see demonstrations to learn about exciting and important areas of research in the field of materials science such as fuel cells, superconducting materials, and shape-memory alloys to name a few.

It is our desire to reach high school junior and senior level students who have an interest in mathematics, chemistry, physics, computer science, or engineering and introduce them to a future in the field of materials science. Your student group will take part in a two hour session during which they will view 6-8 demonstrations to learn more about materials science.

Enclosed, you will find the following

- List of demonstrations to be held at the materials mini-camp
- A School Registration Form

Instructions: This packet of information has been mailed to you as a representative of your high school.

- We ask that you please inform your students about the Materials Mini-Camp and plan for your group of students to attend. You are welcome to bring a group as large or small as you'd like, as long as space is available.

- Please complete one High School Registration form. This will provide us with contact information so that we may more effectively communicate with your group.

- Please fax or mail your Registration Form to the planning committee. **Please register no later than _____.** *All registrations will be accommodated on a first come, first served basis, so you are encouraged to register as soon as possible.*

- Upon receipt of your registration form, the contact person will receive a confirmation of attendance, as well as the time session you are to attend and directions to the Materials Camp location.

If you have any questions, please feel free to contact _____.

We look forward to meeting your students and introducing them to the exciting future that materials science and engineering has to offer!

Sincerely,

Direct email to teachers (Sample)

An invitation for your class to participate …

"Touch, Smell and See the Exciting Science of Materials!"

Bus transportation reimbursement available! (up to $250 per school)

Location: Long Beach Convention Center

When:
(Select one of the sessions to attend)

Tuesday, May 12, 2015
Session 1: 9:00-11:00 AM
Session 2: 12:00- 2:00 PM

Wednesday, May 13, 2013
Session 3: 9:00-11:00 AM
Session 4: 12:00-2:00 PM

Each session can accommodate up to 4 classes.

Contact: Jeane Deatherage at jeane.deatherage@asminternational.org, or respond to this email to reserve your class! (In your email, please indicate how many students from your class or school.)

See below for more details.

The ASM Los Angeles Chapter proudly presents …

MATERIALS CAMP®
ASM MATERIALS EDUCATION FOUNDATION

The ASM Mini-Materials Camp®

Touch, Smell and See the Exciting Science of Materials!

Share the excitement with students at the **2015 ASM Mini-Materials Camp** at Long Beach Convention Center on May 12 & 13, 2015!

High school students and teachers in the local area will be touching, smelling and seeing the exciting application of materials in consumer products presented by up to ten teams of materials science engineers. Groups of students will rotate and interact simultaneously at each station over a two-hour duration. We have scheduled sessions from 9:00 to 11:00 AM and Noon to 2:00 PM on each day. The presentations will be held on the exhibition floor during the Heat Treating Society Conference and Exhibition.

Our goal is to introduce high school students with an interest in engineering, including chemistry, physics and mathematics to a career in materials science engineering.

Encourage a class to attend and then stop by to watch the fun!

If you have questions, please contact: Jeane Deatherage at jeane.deatherage@asminternational.org.

Registration Form - Sample

ASM Mini Materials Camp®

Touch, Smell and See the Exciting Science of Materials!

Share the excitement with your students at the 2015 ASM Mini Materials Camp® at the _____ on _____!
Session times are 9:00 to 11:00 AM and Noon to 2:00 PM each day.

High school students and teachers in the local high schools are invited to come and touch, smell and see the exciting application of materials in consumer products presented by teams of materials science engineers.

This event is part of the 2015 AeroMat, ITSC, and Microstructural Characterization and Aerospace Materials & Coatings.

Please complete and return the following information to (NAME) at (email) or via fax at _____.

Name: _____ Phone No.: _____

Email: _____

School: _____

Street: _____

City: _____ State and ZIP: _____

No. of Students: ____ Date and Session Time: _____

THANK YOU!

A special thanks to our sponsors:

VESUVIUS

MATCO SERVICES INCORPORATED
A valmont COMPANY

Refractory Ceramics Division
The American Ceramic Society

american stress technologies

ASM INTERNATIONAL

AIST FOUNDATION

MCC International Inc.

Zircar CERAMICS

We appreciate the time and teaching of our demo leaders:

Debbie Goodwin
Andrew Nydam
Bob Wesolowski
Ben Hunsicker
Chris Kuhn and William Morries
ACerS Refractory Ceramics Team
ACerS PCSA Team
Nate Eisinger
Howard Kuhn
Justin Sickles

This could not be possible without the help of all our volunteers!

THANK YOU!

2014 MS&T Materials Mini-Camp

MATERIALS CAMP®
ASM MATERIALS EDUCATION FOUNDATION

Goal: Excite young people in materials science and engineering careers.

Industries such as energy, biomedical, aerospace and automotive rely heavily on materials engineers for researching and processing of their products.

Presented by:

ASM INTERNATIONAL | Pittsburgh Chapter

2014 MS&T Materials Mini-Camp® Program

Nitinol: A Shape Memory Alloy

Presented By: Debbie Goodwin
Representing: ASM Materials Education Foundation

Nitinol is a shape memory alloy that has many practical uses. Both shape memory wire and super elastic wire will be demonstrated. The term "solid state phase change" will be introduced. Examples of uses of nitinol will be displayed as well as crystal models.

Corrosion – Ball Bearing Experience

Presented By: Bob Wesolowski
Representing: ASM Materials Education Foundation

Discussion on electron transfer from anode to cathode to illustrate the process of corrosion. Various samples of corrosive materials available. Corroded ball bearing available for students to show electron transfer

Steel Rocks – in 3D

Presented By: Chris Kuhn & William Morries
Representing: AIST Foundation

Steel making involves processes that have withstood the test of time, while integrating new innovations involving high technology. Students will enjoy a captivating 3-D tour of modern steelmaking.

Demonstration of Material Properties

Presented By: ACerS PCSA Team
Representing: President's Council of Student Advisors (ACerS)

1. The properties of materials can change at different temperatures. We will demonstrate how the properties of racquetballs and marshmallows change from room temperature to very low temperatures by chilling the items in liquid nitrogen. 2) Superconducting ceramics exhibit different properties at different temperatures. 3) The concept of piezoelectric ceramics and their uses will be demonstrated.

3D Printing

Presented By: Howard Kuhn
Representing: ExOne

Have multiple 3D printed metal demonstration parts and 3D printed sand molds/cores available for the participants to see and/or handle. Have a computer setup showing the 3D CAD modeling used for Additive Manufacturing.

2014 MS&T Materials Mini-Camp® Program

Can Steel Take the Heat?

Presented By: Andrew Nydam
Representing: ASM Materials Education Foundation

The concept of using heat-treating to change the properties of metals will be demonstrated. Annealed and quenched bobby pins will be used to show the effects of various types of heat-treatment on steel.

Melting Metal with Microwaves

Presented By: Ben Hunsicker
Representing: Allied Minerals

Table top demonstration of sand molding, melting metal in a microwave, pouring liquid Tin into the molds and producing replica arrow heads, starfish and bear claws. The entire process is smokeless and odorless.

Refractory Materials

Presented By: ACerS Refractory Ceramics Team
Representing: Refractory Ceramics Division of The American Ceramic Society

We will melt Jolly Rancher candies to demonstrate glass fiber formation, and will also show how refractories are heat protective by using insulating board to protect a human hand from direct flame.

Exhibit of Materials

Presented By: Nate Eisinger
Representing: ASM Pittsburgh Chapter

Titanium materials from Perryman (Allan Hutt), Ceramic materials from Vesuvius and Zircar Ceramics (Sumin Zhu), Aluminum materials from Alcoa (Philip Smith)

Polymers – Weird, wacky, wonderful

Presented By: Justin Sickles
Representing: ASM Materials Education Foundation

Discussion and demonstrations to illustrate the variety of properties that polymers can display. Hands-on activities for students to get 'up close and personal' with polymers.

ASM Materials Mini-Camp at MS&T 2014

385 Total number of participants

David L. Lawrence Convention Center, Pittsburgh, PA

October 14 & 15, 2014

Morning: 9:00-11:00 AM; Afternoon: 11:30-1:30 (Tues); 12:00-2:00 (Weds)

	Experiment Name	Company	Contact Person	Email or Phone	Mentor/ Presentor	Experiment Description	Presentor will provide	Requirements	Tables	Chairs	Electrical Outlet
1	Nitinol – A Shape Memory Alloy	ASM Materials Education Foundation	Debbie Goodwin	nywin@hotmail.com	Debbie Goodwin	Nitinol is a shape memory alloy that has many practical uses. Both shape memory wire and super elastic wire will be demonstrated. The term "solid state phase change" will be introduced. Examples of uses of nitinol will be displayed as well as crystal models.		6 ft table; 1 chair	2	1	1
2	Can Steel Take the Heat?	ASM Materials Education Foundation	Andy Nydam	andrewnydam@hotmail.com	Andy Nydam	The concept of using heat-treating to change the properties of metals will be demonstrated. Annealed and quenched bobby pins will be used to show the effects of various types of heat-treatment on steel.	propane torch, bobbie pins, quenching cans and pliers, and some spring steel	two 6 ft table; 2 chairs; electrical outlet	2	2	1
3	Corrosion – Ball Bearing Experience	ASM Materials Education Foundation	Bob Wesolowski	robertwes2@gmail.com	Bob Wesolowski	Discussion on electron transfer from anode to cathode to illustrate the process of corrosion. Various samples of corrosive materials available. Corroded ball bearing available for students to show electron transfer		6 ft table; 1 chair	2	1	1
4	Melting Metal with Microwaves	Allied Minerals	Ben Hunsicker	benjamin.hunsicker@alliedmin.com	Ben Hunsicker	Table top demonstration of sand molding, melting metal in a microwave, pouring liquid Tin into the molds and producing replica arrow heads, starfish and bear claws. The entire process is smokeless and odorless.		Two, 6 Ft. Tables- no table cloth. 110 volt power supply, 10 amps; 1 chair	2	1	2
5	Steel Rocks - in 3D	AIST Foundation	Chris McKelvey	cmckelvey@aist.org	Chris Kuhn & William Morries	Steel making involves processes that have withstood the test of time, while integrating new innovations involving high technology. Students will enjoy a captivating 3-D tour of modern steelmaking.		2 tables, waste can, and 16 chairs		17	1
6	Refractory Materials	Refractory Ceramics Division of The American Ceramic Society	Marcia Stout	mstout@ceramics.org	ACerS Refractory Ceramics Team	We will melt Jolly Rancher candies to demonstrate glass fiber formation, and will also show how refractories are heat protective by using insulating board to protect a human hand from direct flame.	Microwave and all needed demo materials, including torch and propane	electrical outlet to plug microwave into.	2	3	1
7	Demonstration of Material Properties	President's Council of Student Advisors (ACerS)	Tricia Freshour	tfreshour@ceramics.org	ACerS PCSA Team	1. The properties of materials can change at different temperatures. We will demonstrate how the properties of raquetballs and marshmellows change from room temperature to very low temperatures by chilling the items in liquid nitrogen. 2) Superconducting ceramics exhibit diferent properties at different temperatures. 3) The concept of piezoelectric ceramics and their uses will be demonstrated.	Liquid Nitrogen, styrofoam bowl, raquet balls, marshmellows, superconducting ceramic, piezoelectric buzzer, 9V battery,	Poster easel.	2	2	0

	Experiment Name	Company	Contact Person	Email or Phone	Mentor/ Presentor	Experiment Description	Presentor will provide	Requirements	Tables	Chairs	Electrical Outlet
8	Exhibit of Materials	ASM Pittsburgh Chapter	Nate Eisinger	neisinger@perrymanco.com		Titanium materials from Perryman (Allan Hutt), Ceramic materials from Vesuvius and Zircar Ceramics (Sumin Zhu), Aluminum materials from Alcoa (Philip Smith)	Display Materials and Descriptions		2	1	0
9	3D Printing	ExOne	Howard Kuhn	Howard.Kuhn@exone.com	Howard Kuhn	Have multiple 3D printed metal demonstration parts and 3D printed sand molds/cores available for the participants to see and/or handle. Have a computer setup showing the 3D CAD modeling used for Additive Manufacturing.	Computer, 3D printing demo parts	10' by 10' area	2	1	1
10	Polymers - Weird, wacky, wonderful	ASM Materials Education Foundation	Justin Sickles	jub_sickles@hotmail.com	Justin Sickles	Discussion and demonstrations to illustrate the variety of properties that polymers can display. Hands-on activities for students to get 'up close and personal' with polymers.		A large waste can &/or large trash bag for disposal	2	1	
	OTHER: For registration and display of materials							Two 6 ft table; 1 chair	1	2	

TOTALS **19** **32** **8**

REQUIREMENTS to Christina / Kelly:

6-ft table	19	
Chairs	32	
Electrical outlet	8	please see specs above, experiment #4
Microphone & podium	1	
Small table to place computer & projector	1	
Screen	1	
Tiny stage / riser (for speaker to stand on - to be seen by audience who will be standing)	1	
Easels	11	

Mini MATERIALS CAMP® Materials Mentor/Experiment Application

DATE OF CAMP

LOCATION

Please fill out the following information and submit to (NAME) by (DATE).

Experiment Name:

Science Mentor (Name and Title/ Company)

Contact Person (Phone Number/Street Address/Fax/Email Address)

Experiment Description (25-50 word description Abstract:

What type of Equipment will you provide/bring for the Experiment:

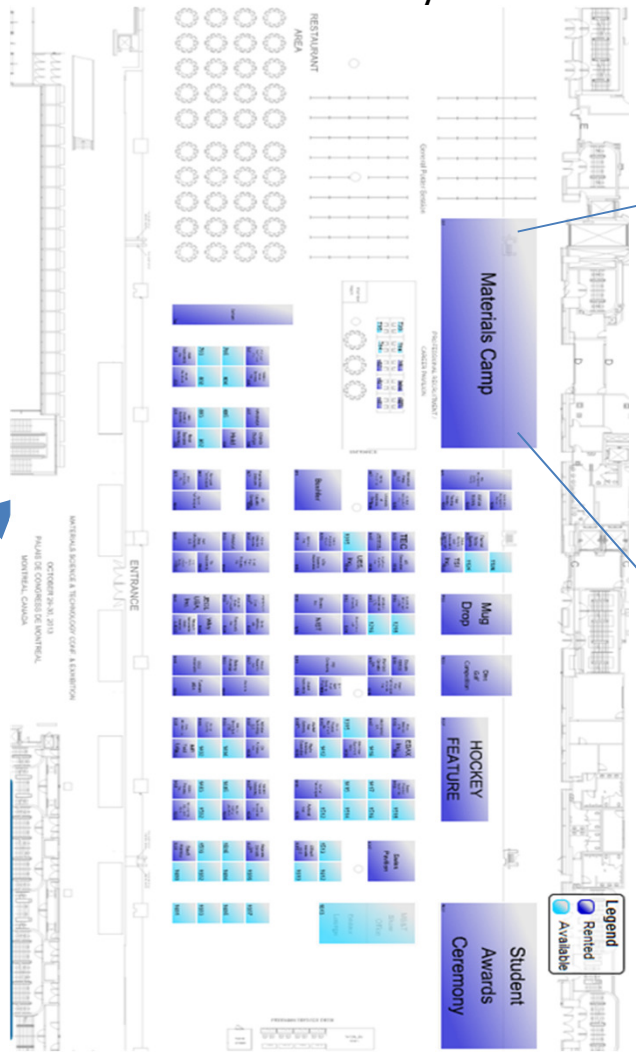
What type of Utilities will be required for the Experiment (electrical/water/ etc..)

Experiment Layout (How much space will you need? Example 2 Tables – 6 ft each)

Additional Support needed?

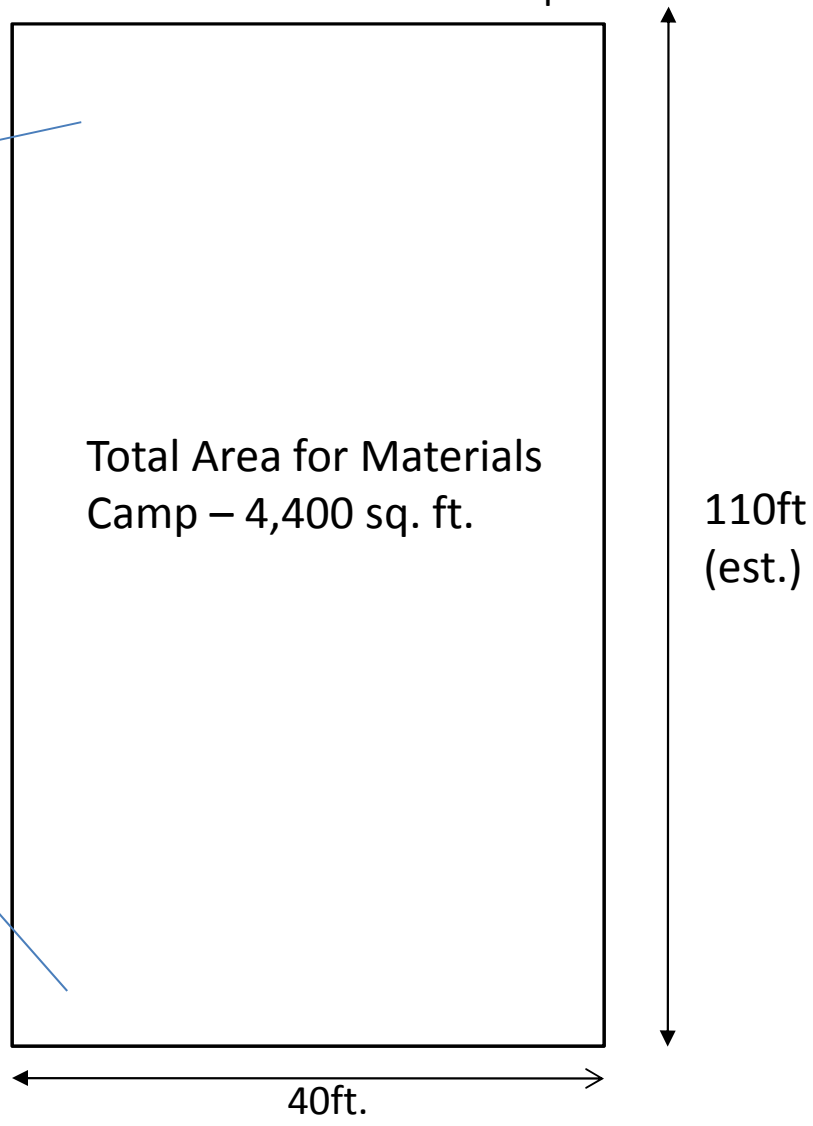
2013 Materials Camp – Montreal Booth #523
Palais des congres de Montreal | Montreal, QC, Canada | Hall A-G

Overall Exhibit Layout

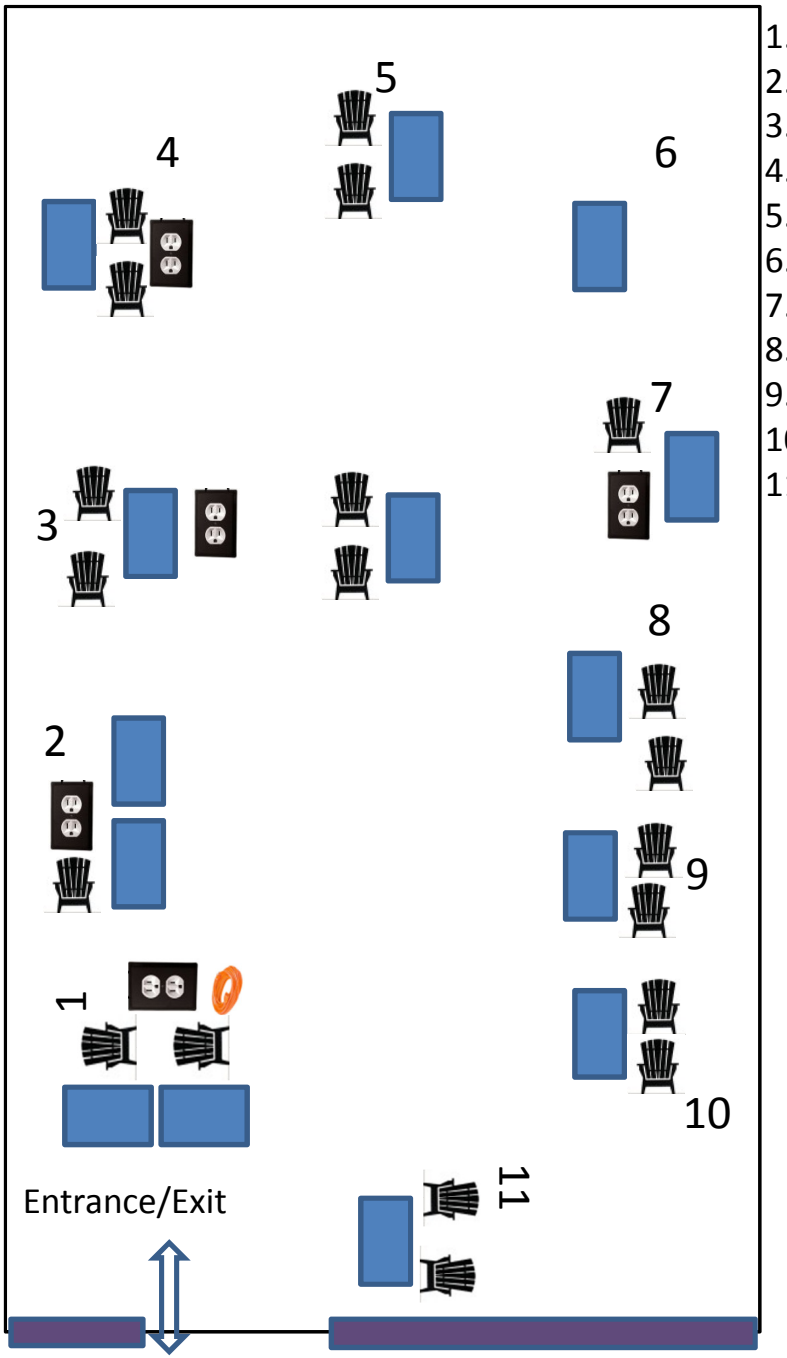


Entrance from Registration

Total Area for Materials Camp



2013 Materials Camp – Montreal Booth #523



1. (Title TBD)
2. (Title TBD)
3. (Title TBD)
4. (Title TBD)
5. (Title TBD)
6. (Title TBD)
7. (Title TBD)
8. (Title TBD)
9. (Title TBD)
10. (Title TBD)
11. Check in table

Area	Table	Chair	Electrical Socket
1	2	2	1
2	2	2	1
3	2	2	1
4	2	2	1
5	2	2	1
6	2	2	1
7	2	2	1
8	2	2	1
9	2	2	1
10			----
11	1	2	----
Total	19	20	9

= Electric

= Chair

= Table

= Booth or Tent

= extension cord

Additional set up

= Roped off section

9B

- Pipe & draping around entire camp
- Pipe & draping around entire camp
- 8 Easels
- Hanging sign above
- Foundation to order signs for easels at each demo station
- Foundation shipping 8 floor mat's for each station
- Foundation shipping 2 materials camp pull-up signs for front entrance

Note: The ASM Foundation will ship floor mats for each demo and 2 "Materials Camp" pull up signs to display @ entrance.

ASM MATERIALS EDUCATION FOUNDATION℠

If you have questions, please contact:

Pergentina (Jeane) L. Deatherage
Administrator, Foundation Programs
Jeane.deatherage@asminternational.org
440-338-5151, ext. 5533

Or

Mary Anne Jerson
Assistant Coordinator, Student Materials Camp Program
MaryAnne.Jerson@asminternational.org
440-338-5151, ext. 5539

Mission: "To excite young people in materials, science, and engineering careers."