THE ASM MATERIALS EDUCATION FOUNDATION IS EXTENDING A CHALLENGE TO ALL U.S. HIGH SCHOOL STUDENTS TO EXHIBIT THEIR KNOWLEDGE OF MATERIALS SCIENCE & ENGINEERING.

There is no charge to enter the Materials Challenge.

- Students should build something with their own hands: a testing or measurement device, structural comparison of materials for a specific purpose, other idea developed by student
- The device should be tested, using data that can be shown
- Findings should be presented in a two-page essay and in a three-minute video aimed at middle school students
- Students will need to send in their videos and essays but NOT the device.

Enter to win a prize and the honor of being the first ASM Materials Challenge for Students winner in ASM Materials Education Foundation history!

Essays and videos must be received by March 31, 2021 at 5 p.m. Eastern Standard Time.
The ASM Materials Education Foundation is extending a challenge to all US high school students to exhibit their knowledge of materials science & engineering.

The ASM Materials Challenge for Students is open to all high school students, including:

• Students in ASM Materials Club
• Students who previously attended an ASM Materials Camp®—Students or Eisenman Materials Camp
• Students currently taking a Materials Science course
• Students whose teachers attended ASM Materials Camp®—Teachers

The Challenge will be to:

• build something with your hands
• test it
• present testing and findings via two-page essay and video to be viewed by middle school students

The Challenge information should include:

• background
• data with explanation of what data shows
• easily communicated ideas, particularly at middle school level

One example of a student challenge project would be “Putting the ‘arc’ in architect:

• Where the arc/arch is used; used in bridges
• Why some materials work well, and some do not (composites, cement, etc.)
• Create a criterion for themselves for pass or fail of use
• The arc would have to be able to support some load, determine load and test

Students may create one of three different types of projects:

• Testing device (tensile tester, impact tester, hardness tester, etc.)
• Measurement device (quantitative look at Oobleck, etc.)
• Structural comparison of materials (arc / arch, silo, roofs, tall structures, etc.)

Any of these projects is acceptable to use. There are many more possibilities of possible projects that would fit into the three categories above than those listed.

Entries will be the videos and a 2-page paper to describe the work. Students do not need to send in their device but should be sure that the video clearly shows the device, how it works, and the data from testing and use.

Checklist of Requirements and Specifications:

• Background research & history
• Explanation of project & process
• Photo journal of progress
• Device or apparatus
• Data
• Description of device/project and whether it tested what was intended
• Video (for middle school students)

Students may work alone or with a partner. Students may work with an ASM member for assistance with concepts and information, but the ASM member may not substantially contribute to the device or data gathering of the project. If an ASM member was consulted, the member must write a paragraph about the extent of their involvement (The paragraph is separate from the two-page essay on the project). Students under 18 years of age must be supervised by a parent or legal guardian.

The winner will receive a $500 prize and be guaranteed a spot at the following summer’s Eisenman Materials Camp at ASM International headquarters, assuming it is held in-person. If two students work together, they will split the prize, but both able to attend the Eisenman Camp. (Due to the ongoing pandemic, ASM Materials Education Foundation has not yet determined whether an in-person Eisenman Materials Camp will take place in 2021. If it does not take place, students will be welcome to attend the ASM Virtual Materials Camp.)

Deadline is March 31, 2021 at 5 p.m. Eastern Standard Time. All materials should be clearly marked with student name and contact information.

Entries may be emailed to foundation@asminternational.org or mailed to ASM Materials Education Foundation 9639 Kinsman Road, Materials Park, OH 44073 ATTN: Materials Challenge for Students.
This form should be filled out and the form submitted as a cover to the essay submission. The judging criteria can be found on the following page.

Name __________________________ Phone (best number to reach you) ____________________

Home Street Address _________________________________________________________________

Home City, State, Zip ________________________________________________________________

School Name ______________________________________ School City, State ______________________

Science/Engineering Teacher ______________________________________ Phone ___________________

Parent/Guardian(s) Name ____________________________________________________________

I agree to allow my (or student, if under age 18) name and project to be used in marketing and other materials or social media postings by the ASM Materials Education Foundation. I further agree that I/student created, made, and tested this device on my own – with the exception of assistance that has been clearly spelled out in the essay and/or separate paragraph.

I also agree that I/Student have not copied in part or whole or otherwise plagiarized the work of other students and/or persons. If being signed by a Parent/Guardian, I agree that I have supervised the student during the creation and testing of the device.

Student Signature _________________________________________________________________

Parent Signature (If student under 18 years of age) ________________________________

For this Challenge, I will attempt to ________________________________________________

_________________________________________________________________________________
The rubric below will be used by the judges to score projects and determine winner.

<table>
<thead>
<tr>
<th>PROJECT TITLE</th>
<th>TOTAL</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>Background research &amp; history</td>
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<td>Explanation of project &amp; process</td>
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<td>Photo journal of progress</td>
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<td>Device (actual build)</td>
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<td>Data</td>
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<td>Pass/fail description</td>
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<td>Video for middle school students</td>
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### POINTS FOR EACH CATEGORY

- Meets specifications 1-5
- Good presentation & data 6-10
- Exceptional presentation & data 11-15

**Additional considerations in evaluating projects:**

- Aesthetic appearance of device
- Cost of device
- Reproducibility of device
- Accuracy of data generated by device
- Video special effects
- Video appeal to middle school students

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