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Partnership Infuses Materials Science Curriculum Directly into High School Classrooms

DETROIT – Leveraging the success of the 2015 ASM Teachers Materials Science Camps, LIFT – Lightweight Innovations For Tomorrow – and the ASM Materials Education Foundation are introducing a new program to disseminate both organizations' materials science content and infuse it into high school curriculum nationwide.

In many schools, basic science, technology, engineering, and math (STEM) building blocks are either nonexistent or lack meaningful, up-to-date-information, creating a disconnect between the curriculum and real world examples. Often, this leaves students to wonder “so what?” instead of “how could I?”

Through the LIFT-ASM partnership, the curriculum content to be delivered directly to high school classrooms focuses on the properties of materials—the science on which all manufacturing is based—as well as specific teaching strategies. These include an aligned curriculum and applied learning labs featuring a capstone project that integrates materials selection, component design, and processing.

With those additions, students will learn foundational STEM skills, work to solve problems in a practical, hands-on manner, and be better prepared for what will be expected of them in college.

“Bringing STEM and materials science education directly to our teachers and students is the best way to get and keep them excited and engaged about both design and manufacturing,” says Nichol Campana, director of development & operations, ASM Materials Education Foundation. “The partnership we have with LIFT is critical to teaching students not only about lightweighting, but also about the future of advanced manufacturing as a whole.”

The new program builds on the success of the 2015 partnership between LIFT and ASM in which the Teachers' Materials Camps operating in 22 states introduced lightweight concepts to attendees. New curriculum will include:

- Videos introducing concepts of mass reduction and problems like needing to minimize mass in vehicles while still meeting crash test standards
- Classroom lab activities introducing materials and process engineering fundamentals necessary to work on the vehicle crash test and other problems
- A capstone project, suitable for integration with high school-level materials curriculum

“We applaud the ASM Materials Education Foundation for its ongoing efforts to increase materials science and STEM education and its continued partnership to bring these teaching resources directly into the classroom,” says Emily Stover DeRocco, education and workforce development director, LIFT. “Our goal is to make the U.S. the global leader in advanced lightweight manufacturing, and in order to do that, it is critical to engage with students and teachers in the classroom.”

Going forward, additional curriculum content, including real-world examples and accompanying videos, is expected to be introduced in 2018 and beyond based on feedback from teachers using the modules in 2016-17. ASM also plans to share examples of capstone project results in education publications, along with lessons learned in rolling out the program, to better inform teachers on best practices in teaching materials science.

In addition to being aligned with LIFT's focus areas of ensuring students gain STEM foundational skills, attracting more young people to manufacturing careers, and teaching the teachers, the ASM materials science curriculum will also be aligned to requirements of the Next Generation Science Standards (NGSS) and Common Core.

For more information on the ASM-LIFT materials science curriculum and other initiatives, visit www.lift.technology or contact Emily DeRocco at ederocco@lift.technology.

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ABOUT LIFT

LIFT is a public-private partnership committed to the development and deployment of advanced lightweight metal manufacturing technologies, and implementing education and training initiatives to better prepare the workforce today and in the future. LIFT is one of the founding institutes of the National Network of Manufacturing Innovation (NNMI), and is funded in part by the Department of Defense with management through the Office of Naval Research. Visit www.lift.technology to learn more.

ABOUT THE ASM MATERIALS EDUCATION FOUNDATION

The ASM Materials Education Foundation provides for the advancement of scientific and engineering knowledge through its support of education and outreach programs. Thanks to the hard work of ASM volunteers, the Foundation is able to provide exciting opportunities for young people, encouraging them to pursue careers in materials, science, and engineering. Visit www.asmfoundation.org to donate or get involved.