

# **Virtual Training Modules for Additive Manufacturing Bridges Knowledge Gaps During COVID Closures**

Mohammad Khondoker, Southern University

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| <i>Award Title:</i>               | RII Track-1: Louisiana Materials Design Alliance (LAMDA) |
| <i>NSF Award Number:</i>          | NSF OIA-1946231                                          |
| <i>Principal Investigator:</i>    | Michael Khonsari                                         |
| <i>Lead Institution Name:</i>     | Louisiana State University                               |
| <i>Award Start Date:</i>          | 07/01/2020                                               |
| <i>Award End Date:</i>            | 06/30/2025                                               |
| <i>Highlight Submission Date:</i> | 3/11/2021                                                |

## **What is the outcome or accomplishment?**

A group of 72 attendees, including faculty members, graduate/undergraduate students, participated in the workshop to learn about all seven categories of additive manufacturing technologies and their underlying process physics.

## **What is the impact?**

Additive manufacturing development opportunities serve as a crucial early component for the workforce development initiatives aimed to benefit the U.S. manufacturing industry. In addition, faculty members and researchers from other disciplines have also gained the necessary knowledge to advance their research. More than 10 LAMDA-affiliated faculty members earned in-depth knowledge on additive manufacturing which will be useful in performing LAMDA's research activities (both SD-1 and SD-2), as well as in developing new grant proposals in that field.

Coursework that covers all seven categories of additive manufacturing is not available at universities in Louisiana. Therefore there was a need for a workshop training module to train graduate and undergraduate students in Louisiana. Through this workshop, more than 15 graduate students and 35 undergraduate students received the necessary knowledge to prepare them for the manufacturing industry in Louisiana.

## **What explanation/background does the lay reader need to understand the significance of this outcome?**

Additive manufacturing (AM) is one of the core components of the fourth industrial revolution, called Industry 4.0. Therefore, it is essential that the U.S. manufacturing industry is supplied with a trained workforce that can utilize the true capabilities of AM technologies. There are seven different types of AM technologies with unique advantages/disadvantages. A manufacturing engineer needs to know the principles of these technologies and their underlying process physics, which will help in improving the performance and lowering the cost of manufactured parts. Being a relatively new technology, AM is not well understood by students because most programs in higher education do not offer AM-related courses. Hence, arranging

workshops to educate graduate/undergraduate engineering students on AM technologies plays a vital role in workforce development for the U.S. advanced manufacturing industry. Such initiatives will help the U.S. to remain the global leader in this field.



*Dr. Mohammad Khondoker hosted the virtual event at Southern University.*