Tulane scientists to share in $20 million NSF award for materials research

June 22, 2020 1:00 PM

Barri Bronston
bbronst@tulane.edu
504-352-2534

Jihun Hamm, an associate professor in the Tulane Department of Computer Science, is teaming up with four other Louisiana universities in the $20 million Louisiana Material Design Alliance (LAMDA), which also includes LSU, Louisiana Tech, Southern University and the University of Louisiana-Lafayette. (Photo courtesy of Jihun Hamm)

Tulane University has been awarded a share of a [$20 million National Science Foundation grant](#) to transform research and education in advanced manufacturing and materials throughout Louisiana.

The award establishes the Louisiana Material Design Alliance (LAMDA) which, in addition to Tulane, includes LSU, Louisiana Tech, Southern University and University of Louisiana-Lafayette.

Researchers will be designing complex alloys and polymers specifically for 3D printing, also known as additive manufacturing, in response to demand for new 3D printing materials to produce metal

and plastic products with fewer defects and longer life.

> *"Collaborative research is so important when addressing the complex, multidisciplinary challenges facing society today."*
>
> *Kimberly Foster, dean of the Tulane School of Science and Engineering*

Coordinated by the Louisiana Board of Regents, the project will allow Louisiana researchers to use advanced machine learning to study the characteristics of novel materials and test how they react under pressure and heat during the manufacturing process.

Jihun Hamm, an associate professor in the Tulane Department of Computer Science, will lead Tulane's work. He and other researchers from the Tulane School of Science and Engineering will be teaming up with ULL on two major research goals aimed at solving the challenging problem of finding structural composition of alloys and polymers with desired chemical and physical properties.

Tulane will also be working with LSU on developing algorithms for inverse design problems, as well as serve as a consultant on machine learning tasks in all phases of the project.

The overall project aims to forge new collaborations among LAMDA institutions and establish new partnerships with federal agencies and industries to build a sustainable research and education program in Louisiana as well as development of a skilled and diverse STEM workforce. It includes summer training programs for community college faculty to provide them with educational tools to incorporate in their own classrooms, a conference series and other outreach activities.

"Collaborative research is so important when addressing the complex, multidisciplinary challenges facing society today," said Kimberly Foster, dean of the Tulane School of Science and Engineering. "I am thrilled to see these key Louisiana institutions collaborating on such an important topic. It is great to see this kind of investment in research in the state of Louisiana, and I'm certain that Dr. Hamm and his students will have the project will be a materials design framework guided by machine learning, a framework to assess structural integrity and a diverse and highly skilled STEM a big impact."

Michael Khonsari, associate commissioner of research for the Louisiana Board of Regents, said the major outcomes of the project will be a materials design frramewok guided by machine learning, a framework to assess structural integrity and a diverse and highly skilled STEM workforce for Louisiana.

"This five-year initiative will propel the state to a leadership role in additive manufacturing materials research and education in the United States, building a bridge between researchers developing materials and efficient manufacturing methods and small and large end-users in industry scaling up 3D printing technologies to bring products to the marketplace," Khonsari said.