

Printing the Future

Yaning Li receives CAREER award

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YANING LI,
ASSISTANT PROFESSOR OF MECHANICAL ENGINEERING, RECEIVED AN NSF
CAREER AWARD.

[Yaning Li](#) has made her mark studying the mechanics and applications of structures and patterns that exist all around us, whether we are aware of them or not. Li, assistant professor of mechanical engineering, received a CAREER Award for her work studying the mechanics of materials as well as bio-inspired engineering utilizing new manufacturing technologies such as 3D printing.

Li's CAREER award will support her study of a new family, or strain, of auxetic chiral composites. These honeycomb-like materials, similar to those found in the structure of bone, are unique in how they respond to being compressed or stretched. Unlike an elastic band, an auxetic material becomes thicker when stretched along its length and thinner when compressed lengthwise. Auxetic materials can flex and stretch easily, making them useful in biomedical applications as well as in cushioning for helmets, where they excel at absorbing energy.

Li's project utilizes one of technology's most recent advancements, 3D printing, to allow her to manufacture and test these new structures. "3D printing has given me the opportunity to do this research, so I'm really in the right place at the right time," she says. She explains that the precision of 3D printing, in comparison to traditional manufacturing methods, allows for the easy fabrication of the sophisticated geometric patterns of the new strains she is developing, allowing her to conduct mechanical experiments and numerical simulations in order to verify the use of the structures for real-world application.

For Li, one of the main missions of this project is educational outreach. She plans on using a substantial amount of this funding to provide educational opportunities to a wide array of students, from graduate and undergraduate research assistants to K-12 students and educators, whom she'll invite into labs for workshops and hands-on scientific learning.

In addition to this CAREER award, Yaning Li has also received previous grants from the NSF as well as the Department of Defense.

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