



DEPARTMENT OF CIVIL ENGINEERING

SEMINAR

Structures and Materials Inspired by Origami

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Parks Road, Oxford, U.K.

Date: 28 February 2024 (Wednesday)

Time: 4:00 p.m. – 5:00 p.m.

Venue: Room 612B, 6/F Haking Wong Building, The University of Hong Kong

Zoom: <https://hku.zoom.us/j/97921911993> (Meeting ID: 979 2191 1993)**ABSTRACT**

Origami folding, a traditional art form of paper folding, has recently gained increasing interest from engineers. The formation of origami structures and the shape change capability of some origami objects can be readily parameterised and applied to the development of new structures and devices. Since most of the sheet materials used in engineering applications are relatively rigid in comparison with paper, particular attention has been drawn to rigid origami, a subset of origami that permit continuous motion between folded states along the pre-determined folding creases without the need for twisting or stretching of the facets. This allows the patterns to be readily manufactured from modern materials such as plastic, metal, or carbon-fibre sheets, producing patterns that are sufficiently strong and durable to be of use in large-scale applications.

In this talk, I will focus on two types of origami structures. The first type is origami morphing structures that are capable of large shape changes. The second type is tubular structures inspired by origami with superior mechanical properties. I will show that not only can origami techniques be effectively exploited to develop novel foldable structures, but they can also be used intelligently to acquire structural features uncommon in conventional structures. Finally, I will conclude my talk with some remarks on future research directions.

ABOUT THE SPEAKER

Dr. Zhong You is a Professor of Engineering Science at the Department of Engineering Science, University of Oxford, and a Fellow of Magdalen College. He is currently a visiting professor at HKU.

Zhong received his bachelor's degree from Shanghai Jiaotong University, his master's degree from Dalian University of Technology, and his Ph.D. from Cambridge University. Zhong's research is focused on the design and realization of novel deployable structures, which are unconventional structures capable of large shape changes. He has published many groundbreaking research papers in prestigious journals such as *Science* and *PNAS*. His work was selected for the Science Day Exhibition at Buckingham Palace in 2007, organized by the Royal Society. Zhong is one of the pioneers of research on origami, and his research work has been featured in the "profile" section of *Science*. He chaired 7OSME, the largest origami conference in the world in 2018. In addition, he developed a flow diversion stent to treat cerebral aneurysms, and Oxford Endovascular, a university spin-off company, was founded to commercialize this technology. Zhong also designed the best-selling foldable folding bed for children known as the Stardust travelcot.

- ALL ARE WELCOME -