

Materials Science and Materials Chemistry

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Continuum robot trunks and tentacles

This talk will provide an overview of research in biologically inspired continuous backbone “trunk and tentacle” continuum robots. Continuum robots are an emerging form of robot structure, featuring smooth backbones. These structures can be formed using a variety of materials and actuation techniques. Often inspired by structures in biology including the trunks of elephants and the arms of octopuses, these robots are inherently compliant. This allows them to adapt to their environments and to penetrate congested spaces where traditional robots cannot.

Continuum robots have found application in a variety of medical procedures. However, their modeling, sensing, and control

present novel, interesting, and significant challenges. In the talk, continuum robots inspired by octopus arms and plants (vines) will be discussed. Use of these robots for novel inspection and manipulation operations, targeted towards Space-based operations, will be discussed.

Speaker Biography

Ian Walker received the B.Sc. in Mathematics from the University of Hull, England, in 1983 and the M.S. and Ph.D. in Electrical and Computer Engineering from the University of Texas at Austin in 1985 and 1989. He is a Professor in the Department of Electrical and Computer Engineering at Clemson University, USA. He is a Fellow of the IEEE and an Associate Fellow of the AIAA.

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