Society of Engineering Science 53rd Annual Technical Meeting

October 2-5, 2016

University of Maryland
College Park Marriott Hotel
& Conference Center

Symposium D-5: Mechanics and Design of Mechanical Metamaterials

(Mechanics of Solids and Structures)

Symposium Organizers:

Jie Yin, Temple University
jieyin@temple.edu

Yaning Li, University of New Hampshire
yaning.li@unh.edu

Symposium Technical Description

Mechanical metamaterials are artificial materials, which are becoming an emerging frontier in scientific research and engineering innovation due to their unprecedented physical properties, arising from the innovative geometrical design of unit cells. Meanwhile, mechanical metamaterials can be reconfigured beyond their original designs by changing the size, shape, and symmetry by means of simple deformation in local structural elements, providing enhanced flexible performance coupled with structural reconfiguration. Mechanical metamaterials synergistically integrate mechanics, geometry, design, properties, and functionality. This symposium will represent the emerging and recent advances in mechanical metamaterials with a focus on their extraordinary mechanical behaviors through purposeful geometrical and mechanical designs, as well as enabled novel engineering applications across a wide range of length scales. Topics of particular interest include:

- Modeling, simulation, fabrication, and experimental characterization of mechanical metamaterials at all scales
- Multifunctional mechanical metamaterials in mechanics, acoustics, electronics, and medicine etc.

- Origami/Kirigami-based 2D and 3D mechanical metamaterials
- Buckling-based reconfigurable metamaterials
- Design of unit geometry and hierarchical structure for exotic mechanical and acoustic properties (negative Poisson's ratio, negative stiffness, negative acoustic indices etc)
- Active soft mechanical metamaterials in response to external stimuli
- Programmable and reprogrammable mechanical metamaterials

Submit an Abstract