

Environmental Engineering Seminar

The Astani Department of Civil & Environmental Engineering presents



Dr. Sarah Billington
Chair, UPS Foundation Professor
Dept. of Civil & Environmental Engineering
Stanford University

Date: Thursday, April 28, 2022

Time: 12:30-1:30 PM

Place: RTH 526

Zoom Meeting:

<https://usc.zoom.us/j/91873923659>

Meeting ID: 918 7392 3659

Hybrid Physical + Digital Spaces for Enhanced Sustainability and Wellbeing

There is a growing recognition that the built environment can substantially impact occupant well-being. However, pinpointing the specific impacts of design features proves to be challenging. While significant advancements have been made using sensing, feedback, and control in "smart buildings", outcomes have focused primarily on energy savings, temperature comfort, and security. Buildings of the future should go beyond this to infer and support the mental and physical well-being of the occupants. A scientific approach to designing buildings for wellbeing can both create knowledge as well as improve the physical and mental health of large populations. Our team with expertise in architecture, structural and materials engineering, human-computer interaction, psychology, environmental behavior, and security, privacy and law is examining how interior features (i.e., materials, lighting, and artwork representing diverse identities) relate to multifaceted dimensions of well-being. Through online studies and a large (N=412) controlled experiment we have been exploring the effects of these varied features on biopsychosocial indicators of well-being including belonging, stress, creativity, and pro-environmental concern, measured through physiological sensors and self-reported assessments. The results of these studies and their implications will be presented, as well as methodological challenges surrounding the design, experimentation, and operation of human-centered built environments.

Sarah Billington is the Chair and UPS Foundation Professor of Civil & Environmental Engineering and a Senior Fellow in the Woods Institute for the Environment at Stanford University. From 1998-2002 she was an Assistant Professor at Cornell University. She received her B.S.E. with high honors in Civil Engineering & Operations Research and a certificate in Architecture Studies from Princeton University and her M.S. and Ph.D. in Structural Engineering from the University of Texas at Austin. Her past research focused on sustainable, durable construction materials including bio-based composites and ductile cement-based composites. Her current research focuses on the impact of building design and materials on human wellbeing and on the public acceptance of affordable housing.