

[acadia](#)

[2013 Conference](#)

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ABOUT

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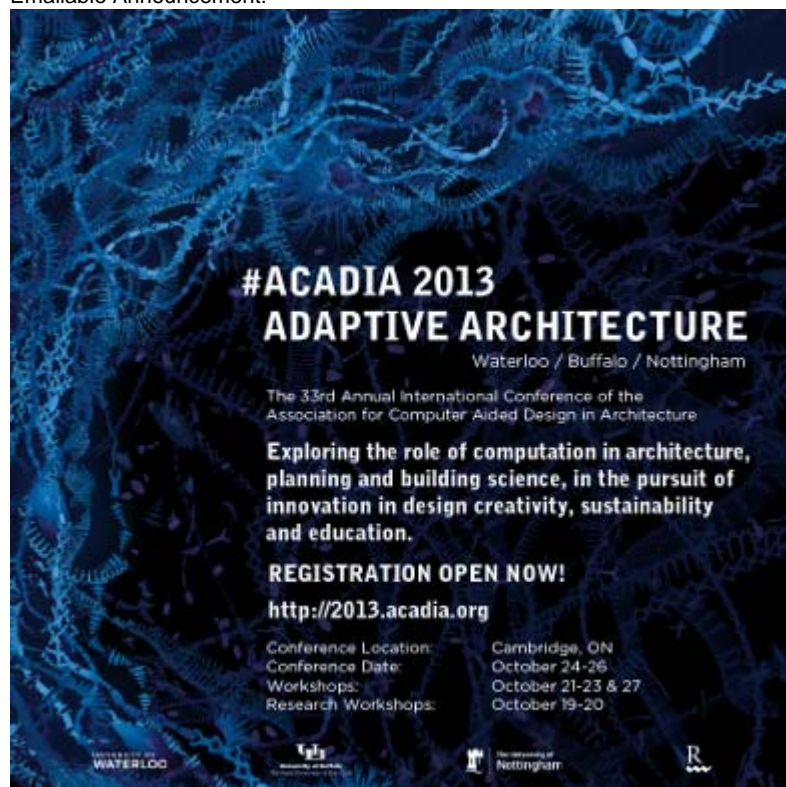
acadia.conference.2013.chairs@gmail.com

About ACADIA

ACADIA was formed for the purpose of facilitating communication and critical thinking regarding the use of computers in architecture, planning, and building science. The organization is committed to the research and development of computational methods that enhance design creativity, and that aim at contributing to the construction of humane physical environments. A particular focus is education and the software, hardware and pedagogy involved in education. Visit the main [ACADIA website](#) for more information.

Media Downloads

Emailable Announcement:



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2013 ACADIA Focus

Adaptation is a quality of living systems. Adaptation can include evolution in response to new conditions, and it can also involve resistance to change. How might we more precisely simulate, visualize and represent the dynamics of open systems? What are useful models for emulating living systems and ecologies? The contemporary information environment of distributed and mobile computing provides opportunities to develop new and subtle relationships between people and the built environment. How might architecture better anticipate and adapt to user and social needs? These emerging ecologies increase architecture's capacity to be more responsive to its inhabitants as well as the natural environment. How might passive, low energy systems offer alternatives to power consuming responsive systems? What tools, materials and assemblies might we use in designing for adaptation? What new industrial and manufacturing possibilities might emerge?

Adaptive Architecture will focus on the computational design of environmentally responsive, intelligent, interactive, and reconfigurable architecture. Research papers and exhibition submissions are invited across a range of topic areas that include distributed interactive systems, complex and generative systems, standards of passive and active design, and performance implications of sustainable architecture.

Advanced computational design methods, building information modeling, and digital fabrication workshops will precede the conference event. Full research papers, short work-in-progress papers, and juried design and research posters will be presented. Work-in-progress presentations will be enriched by mentoring and structured feedback. Student submissions are especially encouraged, supported by an award program and travel and accommodation subsidies. The event will be enriched by curated projects including publications on emerging teaching models for complex systems and adaptive architecture, exhibition of architectural prototypes, and installations by visiting student teams.

The ACADIA event builds on the [first Adaptive Architecture Conference](#) held at the Building Centre, London, Spring 2011. 2013 Co-Chairs are Philip Beesley (University of Waterloo), Omar Khan (University at Buffalo, SUNY) and Michael Stacey (University of Nottingham).

For more information please e-mail:
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Who Can Participate

Specialized researchers, practitioners, students, and members of the public interested in the computational design of architecture are welcome to participate. In addition to architecture and urban design, the gathering will be of general interest to the disciplines of science and art, engineering and design.

ACADIA 2013 Topics

Research presentations will focus on the role of computation in architecture, planning, and building science, and that pursue innovation in design creativity, sustainability, and education. Paper submissions can include the following topics:

TOOLS and INTERFACES

- Simulation, collaboration and generative tools
- Human/Computer Interfaces

NEXT GENERATION TECHNOLOGY

- Responsive environments; distributed controls, sensing, actuation and feedback
- Digital fabrication and robotic craft
- Hybrid structural systems
- Synthetic construction: composite materials, smart assemblies, material analysis

COMPLEX SYSTEMS

- Complex systems in design; emergent and self-organizing systems
- Environmental adaptation, passive systems
- Energy and performance modeling, structural analysis

SOCIAL FORMS

- Participatory design
- Social media and gaming

THEORY AND CULTURE

- Social and cultural implications of computation and cybernetics
- Contemporary and historical approaches to adaptation

TEACHING

- Computational design methodology
- Curriculum models

Organizers

Conference Chairs

Philip Beesley, Professor

University of Waterloo, Philip Beesley Architect Inc. ([link](#))

Omar Khan, Associate Professor and Chair

University at Buffalo, SUNY, Center for Architecture and Situated Technologies ([link](#))

Michael Stacey, Chair in Architecture and Director of Architecture

University of Nottingham ([link](#))

Unconventional Computing: Design Methods for Adaptive Architecture

Rachel Armstrong

Simone Ferracina

Jim McClelland

Waterloo Coordination

Sue Balint

Jonathan Gotfryd

Connor O'Grady

Sheida Shahi

May Wu

Elisabeth van Overbeeke

Mingyi Zhou

Floating Tree, Kristie Taylor-Muise - Web Design

Buffalo Coordination

Albis Del Barrio Batista

Michael Lempert

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Alex Lazarou
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University at Buffalo, SUNY

Jordan Geiger
University at Buffalo, SUNY

David Gerber
University of Southern California

Ruairi Glynn
The Bartlett - University College London

Marcelyn Gow
Southern California Institute of Architecture

Fabio Gramazio
ETH Zurich

Maria Paz Gutierrez
University of California Berkeley

Jonathan Hale
University of Nottingham

Timothy Hemsath
University of Nebraska-Lincoln

Joyce Hwang
University at Buffalo, SUNY

Maciej Kaczynski
University of Michigan

Karen Kensek
University of Southern California

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Axel Kilian
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Kevin Klinger
Ball State University

Branko Kolarevic
University of Calgary

Robert Krawczyk
Illinois Institute of Technology, Architecture

Andrew Kudless
California College of the Arts

Brian Lilley
Dalhousie University

Pablo Lorenzo-Eiroa
The Cooper Union

Gregory Luhan
University of Kentucky

Steven Mankouche
University of Michigan

Scott Marble
Columbia University, GSAPP

Adam Marcus
University of Minnesota, School of Architecture

Wes Mcgee
University of Michigan

Achim Menges
University of Stuttgart, Institute for Computational Design

Volker Mueller
Bentley Systems

Terri Meyer Boake
University of Waterloo

Oliver Neumann
University of British Columbia, School of Architecture and Landscape Architecture

Chantelle Niblock
University of Nottingham

Kat Park
SOM

Vera Parlac
University of Calgary

Andrew Payne
Harvard University

David Pigram
University of Technology, Sydney

Georg Rafailidis
University at Buffalo, SUNY

Dereck Revington
University of Waterloo

Michael Rogers
University at Buffalo, SUNY

Christopher Romano
University at Buffalo, SUNY

Val Rynnimeri
University of Waterloo

Jenny Sabin
Cornell University

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Geoffrey Thun
University of Michigan

Skylar Tibbits
Self-Assembly Lab

Therese Tierney
University of Illinois

Robert Jan van Pelt
University of Waterloo

Kathy Velikov
University of Michigan; RVTR

Tom Verebes
The University of Hong Kong

Joshua Vermillion
Ball State University

Andrew Vrana
University of Houston; TEX-FAB

Glenn Wilcox
University of Michigan

Michael Williams
University at Buffalo, SUNY

Robert Woodbury
Simon Fraser University

Wei Yan
Texas A&M University

Peter Yeadon
Rhode Island School of Design

Shai Yeshayahu
Southern Illinois University Carbondale

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Conferences

One of ACADIA's major missions is to organize and present an annual conference on topics of interest to the architectural computing community. The conference and the publication of its proceedings are a major channel of communication among experts in the field of computer-aided design in architecture. The conference site moves each year, providing members the opportunity to see facilities at schools of architecture around the country.

2016 Conference - Ann Arbor Oct. 27-29, 2016

POSTHUMAN FRONTIERS: DATA, DESIGNERS AND COGNITIVE MACHINES will foster design work and research from the worlds of practice and academia that lie at the intersection between procedural design, designed environments and autonomous machines. More specifically, this conference will seek to explore recent work within the current trend in computational design to develop and apply quasi-cognitive machines; the integration of software, information, fabrication and sensing to generate mechanisms for interfacing with the physical realm.

For more information go to the [2016 Conference Website](#).

- [Conference Hosting](#)
- [Past Conferences](#)
- [Conference Proceedings](#)

Conference Proceedings

Each year ACADIA holds a conference at which peer-reviewed papers are presented and published in a volume of conference proceedings. Members receive the current year's proceedings as a benefit of membership. Proceedings availability for prior years is shown on this page. The years, titles, and purchase prices of each proceedings are noted below.

In addition to the physical copies, all papers and projects form the annual conference Proceedings are stored on [CumInCAD](#). All ACADIA Members have access to the papers on CumInCAD.

Although most Proceedings are out of print, you can purchase copies of some of the recent conferences through the links below. If you have questions, contact the Membership Officer membership@acadia.org for assistance.

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2011	ACADIA 2011 Regional - Parametricism: Student Performance Criteria (SPC) Proceedings Editors: Janghwan Cheon, Steve(n) Hardy, Timothy Hemsath	FREE	DigitalCommons
2010	LIFE in:formation Proceedings of the 30th Annual Conference of the Association for Computer Aided Design in Architecture Editors: A. Sprecher, S. Yeshayahu, and P. Lorenzo-Eiroa		Order from Amazon.com
2010	LIFE in:formation Exhibition Catalogue Editors: C. Ahrens, A. Schmitzberger, M. Wen-Sen Su		Order from Amazon.com
2009	reForm() Proceedings of the 29th annual conference of the Association for Computer Aided Design in Architecture Editors: T. Sterk, R. Loveridge	\$80	Out of Print
2008	Silicon + Skin: Biological Processes and Computation Proceedings of the 28th annual conference of the Association for Computer Aided Design in Architecture Editors: A. Kudless, N. Oxman, and M. Swackhamer	\$50	Order directly from LuLu

 Menu

CumInCAD

CumInCAD is a Cumulative Index about publications in Computer Aided Architectural Design

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responsive materiality



id acadia13_243

authors Khoo, Chin Koi; Salim, Flora

year 2013

title Responsive Materiality for Morphing Architectural Skins

source ACADIA 13: Adaptive Architecture [Proceedings of the 33rd Annual Conference of the Association for Computer Aided Design in Architecture (ACADIA) ISBN 978-1-926724-22-5] Cambridge 24-26 October, 2013), pp. 243-252

summary This paper presents the design of a novel material system with sensing, form-changing and luminous capacities for responsive and kinetic architecture. This aim is explored and evaluated through an experimental design investigation in the form of an architectural skin. Through experimentation with alternative materials and a rigorous process of designing the responsive material systems, a new architectural skin, namely Blanket, emerged from this research. The newly developed responsive material system is an amalgamation of silicone rubbers and glowing pigments, molded and fabricated in a prescribed way—embedded with shape memory alloys on a tensegrity skeletal structure to achieve the desired morphing properties and absorb solar energy to glow in the dark. Thus, the design investigation explores the potential of the use of form-changing materials with capacitance sensing, energy absorbing and illumination capabilities for a morphing architectural skin that is capable of responding to proximity and lighting stimuli. This lightweight, flexible and elastic architectural morphing skin is designed to minimize the use of discrete mechanical components. It moves towards an integrated “synthetic” morphing architecture that can sense and respond to environmental and occupancy conditions.

keywords next generation technology; responsive material system; morphing architectural skin; kinetic structure; physical computing in architectural design; sensing and luminous material

[series](#) ACADIA

[type](#) Normal Paper

email chinkoi.khoo@rmit.edu.au


full text  [file.pdf](#) (2,087,310 bytes)

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details citation



Gorbet, Rob (2010)  Revealing the Hylozoic Ground Interaction Layer , Hylozoic Ground: Liminal responsive architecture, edited by Philip Beesley, 112-123. Toronto: Riverside Architectural Press



Kennedy, Sheila (2011)  Responsive materials , Material design: Informing architecture by materiality, edited by Thomas Schropfer, 118-131. Basel: Birkhauser GmbH

-  Khoo, Chin Koi (2012)  Towards a responsive architectural morphing skin , Proceedings of the 7th International Workshop on the Design & Semantics of Form & Movement (DeSForM 2012), 203-210. Wellington
-  Kolarevic, Branko (2004)  Designing and manufacturing material in the digital age , Fabrication: Education summit white papers, edited by Aron Temkin, 52-55. Toronto: University of Waterloo School of Architecture Press
-  Kretzer, Manuel (2011)  Towards a New Softness: The aesthetics of soft dielectric electroactive polymers and their Application in an architectural context , Proceedings of the the International Adaptive Architecture Conference. London
-  Menges, Achim, and Steffen Reichert (2012)  Material capacity: Embedded responsiveness , Material computation: Higher integration in morphogenetic design, vol. 82, AD, edited by Achim Menges, 52-59. West Sussex: Wiley-Academy
-  Momoda, Leslie A. (2005)  The future of engineering materials: Multifunction for performance: Tailored structure , Proceedings of the tenth annual symposium on Frontiers of Engineering, 10 (2005): 47-52. Washington D.C.: National Academies Press
-  Ritter, Axel (2007)  Smart materials in architecture, interior architecture and design , Basel: Birkhauser
-  Sample, Hilary (2012)  A brise-soleil without a building , Matter: Material processes in architectural production, edited by Gail Peter Borden and Michael Meredith, 329-339. Oxon: Routledge

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Works

