



JULY 8-10

ICSHM

10th International Conference on
Self-healing Materials

10th International Conference on Self-Healing Materials (ICSHM2026)

Conference Program

Venue: Bossone Research Enterprise Center,
Drexel University

Address: 3140 Market Street, Philadelphia, PA 19104



Organizing Committees

Executive Committee:

- Dr. Geetika Mishra (Drexel University, USA)
- Prof. Ahmad Najafi (Drexel University, USA)
- Prof. Christopher Sales (Drexel University, USA)
- Prof. Jialuo He (Widener University, USA)

Scientific Committee:

- Prof. Amir Alavi (University of Pittsburgh, USA)
- Prof. Abir Al-Tabbaa (University of Cambridge, UK)
- Prof. Dimitrios Angelis (Vrije Universiteit Brussel, Belgium)
- Prof. Zhenan Bao (Stanford University, USA)
- Prof. Nele De Belie (Ghent University, Belgium)
- Dr. Cristina De Nardi (Cardiff University, UK)
- Prof. Charles Diesendruck (Technion, Israel)
- Prof. Santiago Garcia Espallargas (TU Delft, Netherlands)
- Prof. Liberato Ferrara (Politecnico di Milano, Italy)
- Prof. Diane Gardner (Cardiff University, UK)
- Prof. Ali Ghahremaninezhad (University of Miami, USA)
- Prof. Yury Gogotsi (Drexel University, USA)
- Prof. Mija Helena Hubler (University of Colorado Boulder, USA)
- Prof. Henk Jonkers (TU Delft, Netherlands)
- Prof. Riccardo Maddalena (Cardiff University, UK)
- Prof. Mo Li (University of California Irvine, USA)
- Prof. Reza Moini (Princeton University, USA)
- Prof. Abhijit Mukherjee (Curtin University, Australia)
- Prof. Kalyana Nakshatrala (University of Houston, USA)
- Prof. Jose Norambuena-Contreras (Swansea University, UK)
- Prof. Kevin Paine (University of Bath, UK)
- Prof. Etelvina Javierre Pérez (Universidad de Zaragoza, Spain)
- Prof. Moe Pourghaz (North Carolina State University, USA)
- Prof. Marianella Hernández Santana (Institute of Polymer Science & Tech., Spain)
- Prof. Erik Schlangen (TU Delft, Netherlands)
- Prof. Nancy Sottos (University of Illinois Urbana-Champaign, USA)
- Prof. Didier Snoeck (Université Libre de Bruxelles, Belgium)
- Prof. Wil V. Sruar (University of Colorado Boulder, USA)
- Prof. Kim Van Tittelboom (Ghent University, Belgium)
- Prof. Russell Varley (RMIT University, Australia)
- Prof. Pablo Zavattieri (Purdue University, USA)

Steering Committee:

- Chair: Nele De Belie (Concrete, Belgium)
- Wolfgang Binder (Polymers, Germany)
- Santiago Garcia Espallargas (Polymers, The Netherlands)
- Etelvina Javierre (Modelling, Biological materials, Spain)
- Mo Li (Concrete, USA)
- Veronique Michaud (Composites, Switzerland)
- Tomoya Nishiwaki (Concrete, Japan)
- Jason Patrick (Composites, USA)
- Eric Schlangen (Asphalt and Concrete, The Netherlands)
- Aude Simar (Metals, Belgium)
- Russell Varley (Polymers, Australia)
- Nakao Wataru (Ceramics, Japan)

Message from the Chairs

Welcome to ICSHM2026!

The 10th International Conference on Self-Healing Materials (ICSHM2026) will take place from July 8-10, 2026, at Drexel University in Philadelphia, PA, USA. ICSHM2026 continues the long-standing tradition of this biennial conference to bring together leading researchers, engineers, and practitioners from around the globe to discuss and advance the field of self-healing materials. At this 10th edition, we will again provide a high-quality international platform for showcasing the latest developments in self-healing materials and related technologies including advancements in understanding chemistry, processing, characterization, modeling, applications, and beyond.

ICSHM 2026 is organized by a dedicated team of researchers, professionals, and volunteers committed to advancing the field of self-healing materials. Building on the successful tradition of the International Conference on Self-Healing Materials (ICSHM), the organizing committee is proud to welcome the global self-healing community to Drexel University in Philadelphia for ICSHM 2026.

The ICSHM 2026 Technical Program brings together leading researchers, engineers, and innovators from more than 18 countries across 6 continents to share the latest advances in self-healing materials. The conference features more than 70 presentations, including keynote and plenary lectures by internationally recognized leaders, technical presentations, poster presentations featured in an interactive poster session, and a commercialization and technology transfer forum. Spanning concrete, polymers, composites, bio-inspired materials, modeling, and emerging applications, the program highlights the breadth, diversity, and global impact of research in self-healing materials.

In addition to a comprehensive technical program, ICSHM 2026 offers several opportunities for networking and community engagement. The conference will begin with an Opening Reception on Wednesday evening, providing attendees with an opportunity to reconnect with colleagues, meet new collaborators, and engage with the international self-healing materials community in an informal setting. The conference Gala Dinner, held at the Museum of the American Revolution, will celebrate the achievements of our field while fostering meaningful interactions among researchers, industry professionals, and students.

We thank you for attending and hope you have an enjoyable and successful conference!



Conference Chair
Yaghoob (Amir) Farnam
Drexel University, USA



Co-Chair
Jason Patrick,
NC State University, USA



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Conference at a Glance

Time	Wednesday, July 8		Thursday, July 9		Friday, July 10	
08:00 - 08:30	Registration with Breakfast		Registration with Breakfast			
08:30 - 09:00	Conference Opening				Session A6	Session B6
09:00 - 09:30	Keynote Lectures		Keynote Lectures			
09:30 - 10:30						
10:30 - 11:00	Coffee Break					
11:00 - 12:30	Session A1	Session B1	Session A4	Session B4	Awardee Keynotes	
12:30 - 14:00	Lunch Break				Closing Session Conference ends: 13:00	
14:00 - 15:30	Session A2	Session B2	Session A5	Session B5		
15:30 - 16:00	Coffee Break					
16:00 - 17:30	Session A3	Session B3	Special Plenary Forum			
18:30 - 20:30	Opening Reception, Photoshoot		Gala Dinner			
20:30 - 21:30						
21:30 - 22:30						

Conference Information

In addition to the information on the conference website (www.icshm2026.org), please also consult the notes below for important contacts, venues, and other relevant information.

Badges

For security purposes, delegates must wear their name badges at all times during the conference. Entrance to the conference areas will be limited to badge holders only. Replacement of lost name badges can be requested at the Registration Desk.

Badge Colors and Identification:

Yellow	Chairs
Red	Executive Committee
Dark red	Event Liaison
Purple	Keynote Speakers
Green	Sponsors
Blue	Participants
Black	Students

Breakfast/Coffee/Lunch

For registered participants wearing their name badges, breakfast is available on all three days of the conference, while lunch is available on Wednesday and Thursday. In addition, coffee and tea will be served along with refreshments at several catering points throughout the poster and conference areas during the breaks.

Dress Code

Recommended dress code for the conference and all social events is business casual.

Emergencies

In case of an emergency at the conference venue, please call the Drexel University Emergency number +1.215.895.2222 or dial 911.

Important Locations

Registration desk, coffee, lunch: Bossone Lobby
Keynote lectures and Session A talks: Mitchell Auditorium
Session B talks: Hill Conference Room
Opening reception and conference photoshoot: Drexel Main Building
Gala dinner: Museum of the American Revolution

Internet Access

The Drexel Guest Network can be used for internet access at the conference venue. The network offers basic web browsing and is limited to specific services that are publicly available.

How To Connect:

- Choose "DrexelGuest" from the list of available wireless networks.
- Open a browser and attempt to access a web site, you should be directed to the Drexel Guest login page. If you are not automatically redirected, please browse to <http://drexelguest.drexel.edu>.
- Follow the instructions, providing your email address to login to the guest network.

Please visit <https://drexel.edu/it/help/a-z/drexelguest/> for more information.

Conference Information

Lost Property

If you see any unattended parcel/baggage, please report to one of the Conference staff members. Should you lose anything at The Study at University City, please inquire at the Registration Desk where any lost items will be held.

Presentation Guidelines

Oral Presentations: Technical presentations are allocated approximately **18 minutes**, including time for audience questions and discussion. Presenters are kindly requested to manage their time accordingly to ensure a smooth transition between talks and to maintain the conference schedule.

Presentation Upload: To facilitate efficient session management and avoid technical delays, all presenters should upload their PowerPoint presentation files at the **registration desk upon arrival**. Presentations will be transferred to a shared conference laptop that will be used during all sessions. Presenters are encouraged to bring their files on a USB drive and verify proper display of multimedia content, animations, and embedded videos. Please make sure that the presentation is uploaded at least one hour before the start of the session to ensure appropriate transfer of files to the designated session and room by the conference staff.

Poster Presentations: Posters should be prepared in **portrait orientation** with dimensions of **36 × 48 inches (91.4 × 121.9 cm)**. **A0-size posters (84.1 × 118.9 cm)** are also acceptable. Authors are encouraged to ensure that text, figures, and tables are clearly legible from a distance of approximately 1–2 meters and to be present during the designated poster session to discuss their work with attendees. Poster needs to be set up at least 1 hr before the start of the session on Friday. A dedicated person will be at the Bossone Lobby to help poster presenters.

Program Changes

The organizers cannot accept liability for any changes in the program due to external or unforeseen circumstances.

Registration and Information

The Registration Desk will be located at the lobby of the Bossonne Research Enterprise Center, and will operate during the following hours:

Wednesday July 8, 8:00 A.M. – 5:30 P.M.

Thursday July 9, 8:00 A.M. – 5:30 P.M.

Friday July 10, 8:30 A.M. – 1:00 P.M.

Services for Disabled Persons

All the rooms at the conference venue are fully accessible to delegates with disabilities. The hotel is fully compliant with ADA standards.

Tickets

Entry to the Opening Reception is included in the registration fee. However, the Gala Dinner is limited to people who have registered for it separately. For those attending the Gala Dinner, please note that there is a sticker on your badge that indicates your entree choice, please make sure to bring your badge to the museum.

Day 1 - Morning Session

Time	Wednesday, July 8, 2026 - Session 1	
08:00 – 08:30	Registration with Breakfast (Location: Bossone Lobby)	
08:30 – 09:00	Opening Session and Welcome (Moderator: Amir Farnam; Location: Mitchell Auditorium)	
8:30	Prof. Amir Farnam, ICSHM 2026 Chair, Drexel University	
8:40	President Antonio Merlo, PhD, President, Drexel University	
8:50	Prof. Dr. Ir. Nele De Belie, Chair of the ICSHM Steering Committee and RILEM President, Ghent University	
09:00 – 10:30	Keynote Lecture (Moderators: Jason Patrick and Amir Farnam; Location: Mitchell Auditorium)	
9:00	Space: The Final Frontier for Self-healing Polymers; Prof. Nancy Sottos , University of Illinois Urbana-Champaign, USA	
9:45	Multi-scaled Biomimetic Materials to Regulate Tissue Regeneration; Prof. Peter X. Ma , University of Michigan, Ann Arbor, USA	
10:30 – 11:00	Coffee Break (Location: Bossone Lobby)	
11:00 – 12:30	Parallel Technical Sessions (Location: Session A in Mitchell Auditorium, and Session B in Hill Conference Room)	
	Session A1: Fundamentals, Limitations, and Advanced Strategies in Concrete Self-Healing; Moderator: Nele De Belie	Session B1: Dynamic Self-healing Polymers; Moderator: Charles Diesendruck
11:00	Self-Healing Concrete with Emphasis on Bio-Based Techniques; Abhijit Mukherjee (Curtin University, Australia)	Energy-Dependent Impact Damage and Healing Response in Sandwich Panels: Post-Impact Flexural Performance and Visual Evidence; Jung-il Song (Changwon National University, Republic of Korea)
11:18	Beyond Bacteria: What Really Drives Carbonate-based Self-healing in Cementitious Cracks; Martyna Janek (Lublin University of Technology, Poland)	Proof-of-Concept: Healable and Recyclable Flax Fiber Composites with Catalyst-Free Vitrimer Matrix for Infrastructure Applications; Shagata Das* (University of Delaware, USA)
11:36	Self-healing Functionalisation Strategies of Textile-Reinforced Mortars; Liberato Ferrara (Politecnico di Milano, Italy)	High-Performance Epoxy Anhydride Vitrimers for Repairable and Recyclable Composite Structures; Russell Varley (RMIT University, Australia)
11:54	Electrical Impedance Tomography and Spectroscopy for Imaging Bio-Mediated Healing in Vascularized Concrete; Moe Pourghaz (North Carolina State University, USA)	Moisture-Activated Durable and Autonomous Self-Healing Epoxy Coating Using Boronic Ester Dynamic Bonds; Sachini Dissanayake* (Deakin University, Australia) & Russell Varley (RMIT University, Australia)
12:12	Self-Healing Mechanisms in Ultra-Ductile High-Strength Cementitious Materials and Structural Components; Mo Li (University of California, Irvine, USA)	Self-Healing Mitigation Strategies for Droplet-Induced Impact Damage in Wind Turbine Blade Leading-Edge Coatings; Po-Wen Wang* (University of Illinois Urbana-Champaign, USA)
12:30 – 14:00	Lunch Break (Location: Bossone Atrium, 3rd floor)	

Note: An asterisk (*) denotes student presenters.

Day 1 - Keynote Speakers

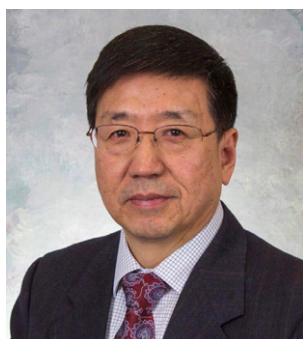


Space: The Final Frontier for Self-healing Polymers

Prof. Nancy Sottos

University of Illinois Urbana-Champaign, USA

Nancy Sottos holds the Maybelle Leland Swanlund Endowed Chair and is Head of the Department of Materials Science and Engineering at the University of Illinois Urbana Champaign. She is leader of the Autonomous Materials Systems (AMS) group at the Beckman Institute for Advanced Science and Technology, director of the EFRC on Regenerative Energy Efficient Manufacturing of Thermoset Polymeric Materials (REMAT), and director of the University of Illinois spoke of the BP International Center for Advanced Materials (ICAM). Sottos is also a co-founder of the start-up companies Autonomous Materials Inc. (AMI) and RapiCure Solutions. The Sottos group develops polymers and composites capable of self-healing and regeneration, self-reporting, and self-protection to improve reliability and extend material lifetime. Her current research interests focus on circular additive and morphogenic manufacturing strategies for polymeric and composite materials with programmed end of life. She is a member of the National Academy of Engineering, the National Academy of Sciences, and the American Academy of Arts and Sciences. She is a Fellow of the Society for Experimental Mechanics, the Society for Engineering Science and the American Association for the Advancement of Science. Sottos is also the recipient of the American Society of Mechanical Engineers Nadai Medal and the Society of Engineering Science Medal.



Multi-scaled Biomimetic Materials to Regulate Tissue Regeneration

Prof. Peter X. Ma

University of Michigan, Ann Arbor, USA

Dr. Peter X Ma received his PhD in Polymer Science and Engineering from Rutgers University (US). He then did his postdoctoral research at MIT and Harvard Medical School on Biomaterials and Tissue Engineering. He is the Richard H. Kingery Endowed Collegiate Professor and a tenured Full Professor in Dentistry, Engineering, and Medicine at the University of Michigan. His research is in the areas of biomaterials and tissue engineering, including scaffold design, biomolecule delivery, bone, cartilage, dental, and cardiovascular tissue engineering. His research has been funded by NIH, DOD, NSF, NASA, various foundations, and industry. Dr. Ma has published 330 full-length articles, published 5 books and is the inventor of 43 distinct US patents and patent applications. Among various recognitions, Dr. Ma received a Whitaker Foundation Biomedical Engineering Young Investigator Award, a DuPont Young Professor Award, and a Distinguished Scientist Award (Isaac Schour Memorial Award) from the International Association of Dental Research. He was named one of the Top 100 materials scientists in the world by Thomson Reuters. He is an elected Fellow of several bodies including the American Institute for Medical and Biological Engineering, Fellow of Biomaterials Science and Engineering, and Fellow of the Materials Research Society.

Day 1 - Afternoon Session

Time	Wednesday, July 8, 2026 - Session 2	
14:00 – 15:30	Parallel Technical Sessions (Location: Session A in Mitchell Auditorium, and Session B in Hill Conference Room)	
	Session A2: Healing Performance and Efficiency in Cement-based Composites; Moderator: Chris Sales	Session B2: Self-healing Composites & Manufacturing; Moderator: Russell Varley
14:00	Gelatin as a Nucleation Scaffold to Enhance Enzyme-Induced CaCO ₃ Precipitation for Self-Healing Concrete; Chris Sales (Drexel University, USA)	Additive Manufacturing for Scalable Fabrication of Self-Healing Thermoplastic Composites; Daniel Therriault (Polytechnique Montréal, Canada)
14:18	Exploring Fungal-Induced Mineralization for Crack Healing in Cementitious Mortar; Nuo Bao* (Louisiana State University, USA)	Self-Healing Biomanufactured Protein Fibers; Hasanur Rahman* (Penn State University, USA)
14:36	Bacterial Nanocellulose for Repair and Repeated Self-healing of Concrete; Mija Hubler (University of Colorado at Boulder, USA)	Self-Healing Energetic Materials; Charles Diesendruck (Technion – Israel Institute of Technology, Israel)
14:54	Fatigue-Induced Healing Mechanisms in Self-Compacting Natural Hydraulic Lime Concretes; Gonzalo Ruiz (Universidad Rey Juan Carlos, Madrid, Spain)	Study of the Reaction of Pyrex Powder and BaCO ₂ as a Function of Temperature as a Probe for Generated Silica Reactivity; Jacob Hormadaly (Ben-Gurion University, Israel)
15:12	Evaluation of the Healing Capacity of Limestone Calcined Clay Mortars; Marwa Hassan* (Universite de Rennes, France)	Repeatable Self-Healing of Interlaminar Fracture in Prepreg Composites via In Situ Thermal Remending; Yerassyl Kuan* (North Carolina State University, USA)
15:30 – 16:00	Coffee Break (Location: Bossone Lobby)	

Note: An asterisk (*) denotes student presenters.

Day 1 - Evening Session

Time	Wednesday, July 8, 2026 - Session 3	
16:00 – 17:30	Parallel Technical Sessions (Location: Session A in Mitchell Auditorium, and Session B in Hill Conference Room)	
	Session A3: Self-healing Concrete Durability; Moderator: Aveline Darquennes	Session B3: Nature-inspired Self-Healing Strategies; Moderator: Liberato Ferrara
16:00	Effect of Crack Pre-healing on Sulfate Degradation for Self-healing Concrete with Bacteria-based or Crystalline Admixture Healing Agents; Nele De Belie (Ghent University, Belgium)	Bone-Inspired Self-Adaptive and Self-Healing Materials for Resilient Future; Sung Hoon Kang (Korea Advanced Institute of Science and Technology, Republic of Korea)
16:18	Influence of Micro-climate Conditions on Concrete Carbonation; Kosmas Sideris (Democritus University of Thrace, Greece)	Design and Integration of Architected Vascular Network in Cementitious Materials; Niyousha Niknezhad* (Drexel University, USA)
16:36	Case Study in the Tren Maya Project, Mexico using Enzyme Based Waterproofing; Mario Baggio (Alchemco, USA)	Biomimetic Vascular Networks for Cyclic Self-Healing of Lime Mortars in Heritage Masonry; Cristina De Nardi (Cardiff University, UK)
16:54	Antimicrobial Self-Healing Concrete to Mitigate Biogenic Sulfuric Acid Corrosion: Confocal Microscopy and SEM Evidence from <i>Pseudomonas aeruginosa</i> Biofilms; Emilio Takagi* (Aeronautical Institute of Technology, Brazil)	Frontier of Extrusion-Based 3D-Printing for Design of Complex Tubular and 3D Vascular Architected Toolpaths; Shashank Gupta* (Princeton University, USA)
17:12	Microbial Self-Healing Concrete with Smart Magnesium Oxychloride Cement Capsules; S.H. Chu (Aalto University, Espoo, Finland)	From Root Canal to Concrete: Endodontics-Inspired Vasculature for Targeted Bio-Healing of Aged Cementitious Materials; Mohammad Irfan Iqbal (Drexel University, USA)
18:30 – 21:30	Opening Reception (Location: Drexel Main Building Court, 3141 Chestnut Street)	
20:30	Conference Photoshoot	

Note: An asterisk (*) denotes student presenters.

Day 2 - Morning Session

Time	Thursday, July 9, 2026 - Session 1	
08:00 – 09:00	Registration with Breakfast (Location: Bossone Lobby)	
09:00 – 10:30	Keynote Lecture (Moderators: Mo Li and Ahmad Najafi; Location: Mitchell Auditorium)	
9:00	20 Years of Self-healing Construction Materials; Prof. Erik Schlangen, Delft University of Technology, Netherlands	
9:45	Temporal Sequence in the Growth of Hard and Soft Domains in Polymer Layers Affects Final Morphology; Prof. Anna Balazs , University of Pittsburgh, USA	
10:30 – 11:00	Coffee Break (Location: Bossone Lobby)	
11:00 – 12:30	Parallel Technical Sessions (Location: Session A in Mitchell Auditorium, and Session B in Hill Conference Room)	
	Session A4: Fracture Mechanics and Modeling in Concrete Self-Healing; Moderator: Moe Pourghaz	Session B4: Gelatin-Based Self-Healing Strategies; Moderator: Mija Hubler
11:00	Prolonged Crack Healing in Concrete with Microencapsulated Secondary Healing: A Numerical Study; Ahmad Najafi (Drexel University, USA)	The Effect of Temperature, Relative Humidity and Binder-Sand Ratio Variations on Compressive Strength of Living Building Materials; Gadisa Merdassa* (University of Colorado Boulder, USA)
11:18	Fracture and Statistical Mechanics for Design of Architected Cementitious Composites: Experiment, Theory, and Simulation; Reza Moini (Princeton University, USA)	Super Tough Multi-Bond Network Hydrogels with Self-Healable Properties; Xu-Ming Xie (Tsinghua University, China)
11:36	Multi-physics Modeling of Fracture-healing Response in Self-healing Concrete with MICCP and Phase-field Model; Hsiao Wei Lee (Cheng Kung University, Taiwan)	Internal-External CO ₂ Curing Synergy: Enzymatic Hydrogel Strategy for Improved Carbonation of Wollastonite-Based Cementitious Materials; Mehdi Khanzadeh Moradillo (Temple University, USA)
11:54	Laboratory Assessment and Numerical Modeling of Self-healing Concrete with Lightweight Aggregates Encapsulated by Modified PVA; Jialuo He (Widener University, USA)	Mechanically Activated Autonomous Self-Healing of Volcanic-Clay Cement Pastes Using a Novel Superabsorbent Hydrogel-Cellulose Microfiber System; Ángel De La Rosa Velasco (Universidad Rey Juan Carlos, Spain)
12:12	Direct Tensile Testing and Fracture Behavior of Microcapsules; Alireza Ashkpour* (Drexel University, USA)	Self-Healing Performance of Cementitious Materials with Hydrogel under Marine Environment; Farzad Rezaeicherati* (University of Miami, USA)
12:30 – 14:00	Lunch Break (Location: Bossone Atrium, 3rd floor)	

Note: An asterisk (*) denotes student presenters.

Day 2 - Keynote Speakers



20 Years of Self-healing Construction Materials

Prof. Erik Schlangen

Delft University of Technology, Netherlands

Erik Schlangen is professor "Experimental Micromechanics" at the Civil Engineering and Geosciences faculty at Delft University of Technology. Central to his work is micromechanics, which involves studying materials at the microscopic level to understand and manipulate their structural properties. This research provides insights into the intrinsic behaviour of construction materials, allowing for the development of more durable and sustainable solutions. The studies on the micromechanical properties of concrete and asphalt have also led to breakthroughs in self-healing materials, enhancing the longevity and resilience of infrastructure. Additionally, his research encompasses smart construction materials, discrete element modelling, and 3D printing of concrete. The advanced testing facilities at the Microlab of Delft University support these innovative studies. In 2025, he was awarded an ERC-advanced-grant MAGICON, which is the most prestigious personal grants for research in Europe.



Temporal Sequence in the Growth of Hard and Soft Domains in Polymer Layers Affects Final Morphology

Prof. Anna Balazs

University of Pittsburgh, USA

Anna C. Balazs is a Distinguished Professor of Chemical Engineering and holds the John A. Swanson Endowed Chair in Engineering at the University of Pittsburgh. She received her B.A. in physics from Bryn Mawr College and her Ph.D. in materials science from the Massachusetts Institute of Technology in 1981. Balazs is a Fellow of the American Physical Society, the Royal Society of Chemistry, and the Materials Research Society. She received the Gutenberg Research Award, Mainz Germany (2025), American Physical Society Polymer Physics Prize (2016), the Royal Society of Chemistry S F Boys-A Rahman Award (2015), the American Chemical Society Langmuir Lecture Award (2014) and the Mines Medal from the South Dakota School of Mines (2013). She is a member of the National Academy of Science and the National Academy of Engineering.

Day 2 - Afternoon and Evening Sessions

Time	Thursday, July 9, 2026 - Session 2	
14:00 – 15:30	Parallel Technical Sessions (Location: Session A in Mitchell Auditorium, and Session B in Hill Conference Room)	
	Session A5: Long-term Performance and Case Studies in Self-Healing Concrete; Moderator: Abhijit Mukherjee	Session B5: Polymeric Self-healing & Self-sensing I; Moderator: Daniel Therriault
14:00	Durability Indicators and Concrete Service Life: Difference in Values Measured in the Laboratory Concrete and On-Site Concrete; Kosmas Sideris (Democritus University of Thrace, Greece)	AI Meets Self-Healing Polymers: PINN-Driven Approach in Unlocking Structure-Property Relationships of Reversible Diels–Alder Polymers; Seppe Terryn (Vrije Universiteit Brussel (VUB), Belgium)
14:18	Self-healing Properties of Hennebique Concrete over 130 Years Old; Didier Snoeck (Universie Libre de Bruxelles, Belgium)	Autonomous Alignment and Healing in Multilayers of Immiscible Dynamic Polymers for Damage-Perceptive Soft Electronics; Samuel Root (Case Western Reserve University, USA)
14:36	Case Study – The Use of the Crystallizing Additive in the Mitigation of Leakage in a Water Treatment Plant; Mitchell Glaze (THOMCO Inc.) & Leonardo Coutinho (Alchemco, Brazil)	Interface Behavior of Periodic Dynamic Polymers with Identical Backbones and Distinct Dynamic Bonds; Alexandra Ramos Figueroa* (Stanford University, USA)
14:54	Building the Bridge: Bringing European Concrete Innovation into the American Construction Market; Anna Jensen (Restoration Partners, USA)	Statistically Optimized Polymer Inclusion Membranes for Intelligent and High-Selectivity Calcium-Ion Separation; Arash Adhami* (Drexel University, USA)
15:12	Life-Cycle Cost Optimization of Concrete Repairs: Reducing Total Ownership Cost Without Increasing Risk; Mario Baggio (Alchemco, USA)	Sustained Self-Sensing and Autonomous Self-Healing via Electro-Thermal Coupling in Fiber-Reinforced Composites; Jack Turicek* (North Carolina State University, USA)
15:30 – 16:00	Coffee Break (Location: Bossone Lobby)	
Time	Thursday, July 9, 2026 - Session 3	
16:00 – 17:30	Special Plenary Forum Session: Commercialization & Technology Transfer (Moderator: Reza Moini; Location: Mitchell Auditorium)	
16:00	Building Confidence in Commercializing Self-Healing Materials: From Research Validation to Field Implementation; Mario Baggio Bionote , Alchemco	
16:12	Planning for Commercialization during Ideation; Mija Hubler , University of Colorado at Boulder	
16:24	The Startup Path to Commercialization: from Incorporation to Exit; Dennis Gilmore , Structeryx, Inc.	
16:36	Navigating Commercial Needs and Cultural Differences; Anna Jensen , Restoration Partners	
16:50	Q&A Forum	
18:30 – 22:30	Gala Dinner** (Location: Museum of the American Revolution, 101 S 3rd St, Philadelphia, PA) Sponsored by PENETRON	
18:30	Cocktail Reception and Museum Access (Location: Oneida Atrium and Museum)	
19:45	Dinner (Location: Liberty Hall)	

** Limited transportation will be available leaving at 6:10 PM and returning at 9:50 PM. Pick-up: In front of the Drexel Mario the Magnificent Statue (S 33rd Street and Market Street) Destination: The Museum of the American Revolution (101 South Third Street)

Note: An asterisk (*) denotes student presenters.

Day 2 - Special Plenary Panelists

Moderator

Reza Moini, PhD
Assistant professor, Princeton University

Dr. Moini earned his Ph.D. from the Lyles School of Civil Engineering at Purdue University in 2020. He is a core Robotic Faculty and an associated faculty member of the Princeton Materials Institute (PMI), Princeton Center for Computational Science & Engineering (PICSciE).

His work is motivated by the intellectual challenges in understanding the fracture and statistical mechanics of architected and disordered materials. His group uses experiments, simulation, and theory to engineer the mechanics of materials, by developing numerical frameworks that help probe hypotheses in layered materials and by advancing autonomous robotic fabrication processes that assist in realization of complex materials. He is the recipient of several awards, most recently, Walter P. Moore Jr., Faculty Achievement Award from American Concrete Institute in 2025, Howard B. Wentz Jr. Junior Faculty Award in 2024 from the School of Engineering and Applied Science at Princeton University, and National Science Foundation (NSF) early CAREER award in 2023.

Panelists

Mario Baggio Bionote
Chief Executive Officer, Alchemco



Mario Baggio is the Founder and CEO of Alchemco, a U.S.-based company focused on advancing technologies that enhance the durability, resilience, and service life of concrete infrastructure. Over the past three decades, he has worked at the intersection of materials innovation and practical engineering applications, helping bridge the gap between research, technology development, and field implementation. His experience spans transportation, water, industrial, and commercial infrastructure projects across multiple countries, with a particular interest in long-term concrete durability, sustainability, and the adoption of innovative construction materials. Mario is an active advocate for collaboration between academia, industry, and asset owners to accelerate the successful implementation of emerging technologies in the built environment.

Mija Hubler
Associate Professor, University of Colorado, Boulder



Mija Hubler is an associate professor in Civil, Environmental, and Architectural Engineering at the University of Colorado, Boulder. Her research focuses on concrete infrastructure degradation mechanics and innovative concrete materials development. She has received the EMI Leonardo Da Vinci award and Gustavo Colonnetti Medal for her creative contributions in these areas. She is a co-founder of two startups on biological concrete (Prometheus Materials) and bio-based repair of concrete (Ripalith).

Day 2 - Special Plenary Panelists

Anna Jensen

Chief Operating Officer, President and Board Chair, Restoration Partners, LLC



Anna Jensen is COO of Restoration Partners and brings over 20 years of experience in operations, management, and economic development. She spent a decade as a partner at ACDS, LLC, a management and economic development firm, and served as Executive Director of the New York AgriDevelopment Corporation, where she demonstrated her ability to grow organizations and lead larger teams. Her background also includes managing software distribution for an oilfield geosteering company, giving her firsthand experience navigating technologically driven industries. Additional roles as Associate Faculty at Tyler Junior College and Director of Special Projects for the Texas Department of Agriculture have given her a broad understanding of organizational development across diverse sectors. Anna is also a certified Project Management Professional.

Dennis Gilmore, Ph.D.

Chief Operating Officer, Structeryx, Inc.



Dr. Dennis Gilmore is an executive with over four decades of experience in technology creation for aerospace, energy, electronics, healthcare and defense industries. In addition to his executive position at Structeryx, he is also the President of Crosslynk Research & Consulting which focuses on providing technology commercialization guidance services to universities, research institutes and start-up companies. Prior to Crosslynk Research he held positions of Vice President of Discovery Science & Technology at RTI International, Executive Director of Research Product Development Company in Saudi Arabia, and global technology leadership positions in PPG Industries and Royal Dutch Shell. Dennis has led the development and global commercialization of more than 200 new products and processes in multiple industries and has extensive experience in formation and operation of international joint ventures as well as technology licensing activities. Dr. Gilmore received his B.S. from Missouri State University and his Ph.D. in Chemistry from Duke University.

Day 3 - Morning Session

Time	Friday, July 10, 2026	
8:30 – 9:30	Parallel Technical Sessions (Location: Session A in Mitchell Auditorium, and Session B in Hill Conference Room)	
	Session A6: Microbial Induced Calcite Precipitation for Self-Healing in Concrete; Moderator: Cristina De Nardi	Session B6: Polymeric Self-healing and Self-sensing II; Moderator: Hsiao Wei Lee
8:30	Understanding Calcium Carbonate Polymorph Formation during Microbially Induced Calcium Carbonate Precipitation; Yacoub Alqenai* (Drexel University, USA)	Recyclable and Reconfigurable Soft, Self-Healing Electronics: A Reality or a Myth?; Ehsan Mirabdollah* & Seppe Terryn (Vrije Universiteit Brussel, Belgium)
8:50	Enhancing MICCP Process in Self-Healing Concrete by Addressing Cell Encapsulation and Investigating the Impact of Exogenous Carbonate Ions; Kiana Ahmari* (Drexel University, USA)	A Model Reaction for Metathesis-Based Self-Healing in Conductive Polymers; Henrike Zacher* (TU Ilmenau, Germany)
9:10	Genetic Regulation for Microbial Self-Healing Concrete; Suzy Chen (Princeton University) and S. H. Chu (Aalto University, Finland)	Simple Solvent-Swell Method for Fabrication of Complex Microvascular Networks in Fiber Reinforced Polymer Composites; Wojciech Guziewicz* (AGH University of Krakow, Poland)
9:30 – 11:00	Poster Session with American-style Brunch (Moderators: Jialuo He and Chris Sales; Location: Bossone Lobby)	
11:00 – 13:00	Closing Session & Awardees' Keynote Lectures Ceremony (Moderators: Amir Farnam, Jason Patrick, and Nele De Belie; Location: Mitchell Auditorium)	
11:00	Mid-Career Award Keynote: Healing and Beyond: Superabsorbent Polymers in Cement-based Materials; Prof. Didier Snoeck , Université Libre de Bruxelles, Belgium	
11:45	Early-Career Award Keynote: Self-healing Soft Robots: Bridging Material and System-level Research; Prof. Seppe Terryn , Vrije Universiteit Brussel, Belgium	
12:30	Best Research, Oral Presentation and Poster Winner Announcements	
12:40	ICSHM 2026 Team Recognition	
12:50	ICSHM2028 Announcement and Closing Remarks	

Note: An asterisk (*) denotes student presenters.

Day 3 - Awardee Keynote Speakers

Mid-Career Awardee



Healing and Beyond: Superabsorbent Polymers in Cement-based Materials

Prof. Didier Snoeck

Université Libre de Bruxelles, Belgium

Didier Snoeck is an Associate Professor at Université Libre de Bruxelles (ULB) Belgium, and holds the chair on Sustainable Structural Design. His work focuses on innovative and sustainable concrete, with particular attention to durability, self-healing materials, and fiber-reinforced cementitious materials. He conducts research on superabsorbent polymers in concrete, which enhance crack control, mitigate shrinkage, and promote self-sealing and autogenous healing. Didier Snoeck has received the RILEM Gustavo Colonnetti Medal in recognition of his contributions to advanced concrete and cementitious materials research. Through academic publications and collaborations, he supports the development of more resilient and environmentally responsible construction materials.

Early-Career Awardee



Self-healing Soft Robots: Bridging Material and System-level Research

Prof. Seppe Terryn

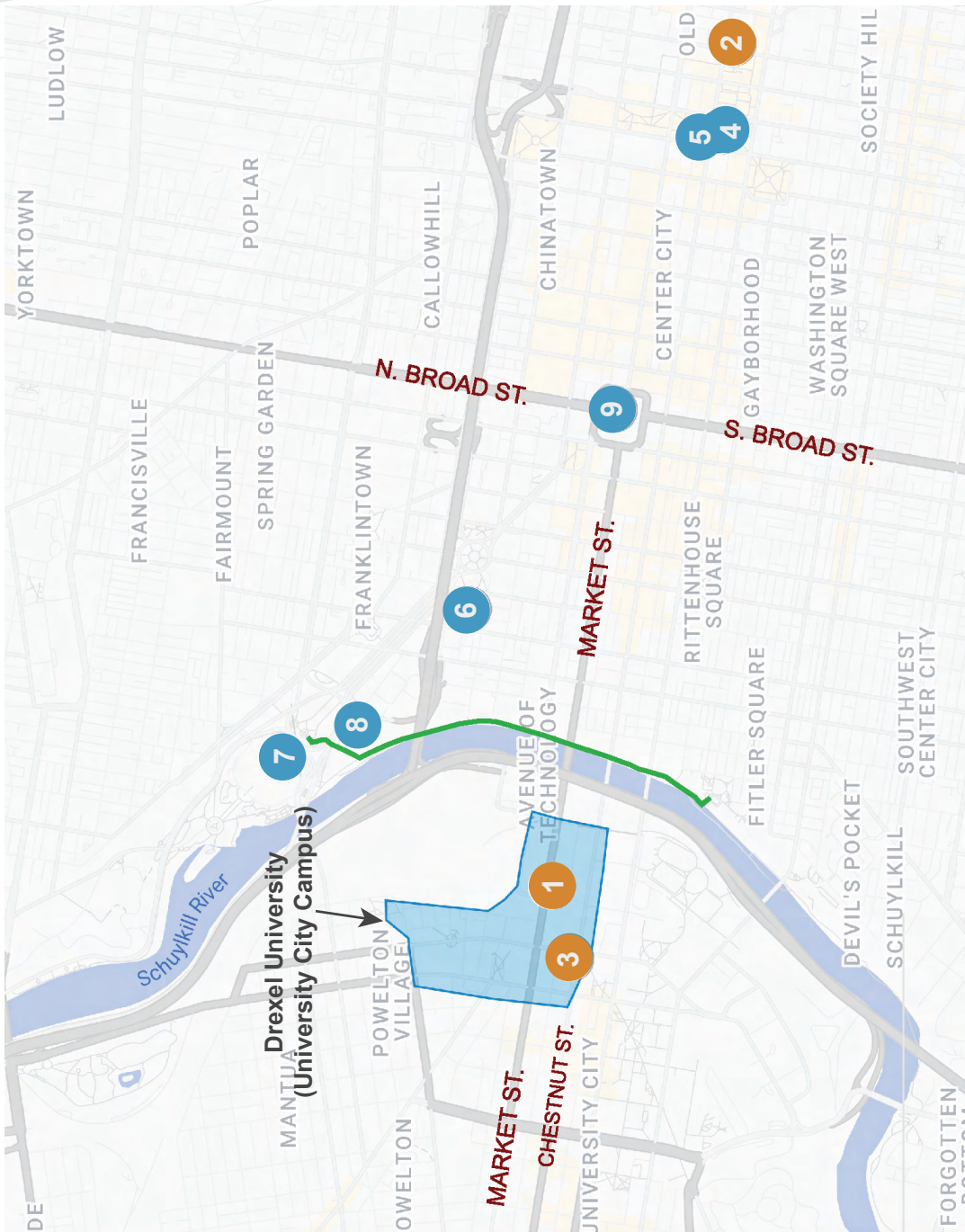
Vrije Universiteit Brussel, Belgium

Seppe Terryn is an assistant professor at Brubotics, the sustainable human-centered robotics laboratory of the Vrije Universiteit Brussel (VUB), and imec. His research bridges materials science, robotics, and machine learning, creating a strong synergy between self-healing polymers and damage-resilient systems. He pioneered self-healing soft robots, publishing a landmark paper in Science Robotics in 2017. He has co-led major national and EU projects (EIC FET Open SHERO, MSCA SMART, EIC Transition SHINTO), focusing on the interface between self-healing polymers and soft robotics. During his postdoctoral fellowship, partly conducted at the University of Cambridge (UK), he developed the novel idea of combining material-based healing—often limited to partial recovery—with software compensation through machine learning. Recently, he initiated a new research line on self-healing medical phantoms for repeated surgical training. Moreover, S. Terryn is also a part-time Business Developer at imec and co-created the start-up Valence Technologies that aim to commercialize self-healing polymers in transport and robotics. Today he acts as a scientific advisor for the company.

Day 3 - List of Posters

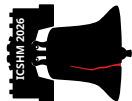
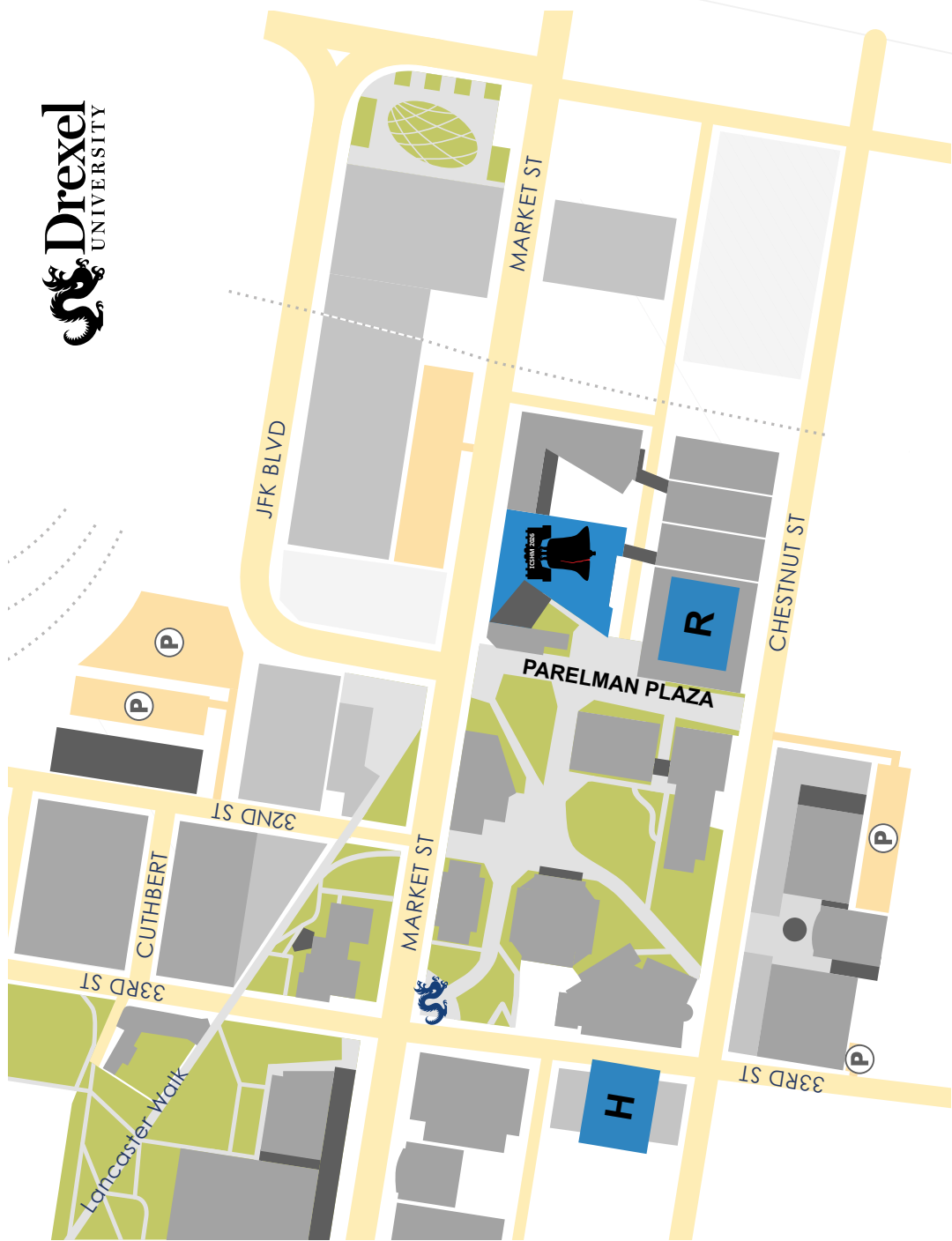
Number	Title	Affiliation(s)
P-1	Self-healing Concrete Mixed with CCU-Based Calcium Carbonate and GGBS	Wakaba Takaishi, and Keiyu Kawaai (Ehime University, Ehime, Japan)
P-2	Latent DCPD-Based Photo-Triggered Self-Healing Formulation	Sandra Idelman , and Charles E. Diesendruck (Technion, Israel)
P-3	Self-Healing Energetic Composites Based on Microencapsulation of Isocyanates	Cheli Kotler, Charles E. Diesendruck (Technion, Israel)
P-4	Enhanced Crack-Healing Performance of Bacteria-Based Self-Healing Mortar through Alginate–Vacuum Encapsulation in Off-Spec Fly Ash Lightweight Aggregates	Mohammad Irfan Iqbal (Drexel University, USA), Puput Risdanareni (State University of Malang, Indonesia), Monita Olivia (State University of Riau, Indonesia), Yousif Alqenai, Bankole Tejuoso, Geetika Mishra, and Yaghoob (Amir) Farnam (Drexel University, Philadelphia, PA, USA)
P-5	Efficiency Analysis of Inorganic Pollutant Removal Using Mineral Cement and Aggregate Replacements in Pervious Concrete	Joanna Fronczyk (Warsaw University of Life Sciences, Poland), and Wojciech Franus (Lublin University of Technology, Poland)
P-6	Advancing Self-Healing of Aged Concrete: A Hydrogel-Based Vascular Approach for MICCP Activation	Geetika Mishra, Noelle Lilan, and Yaghoob (Amir) Farnam (Drexel University, USA)
P-7	Self-Healing Biomanufactured Protein Fibers	Hasanur Rahman, and Melik Demirel (Penn State University, USA)
P-8	Enhancing MICCP Process in Self-Healing Concrete by Addressing Cell Encapsulation and Investigating the Impact of Exogenous Carbonate Ions	Kiana Ahmari, Seyed Ali Rahmaninezhad, and Christopher Sales (Drexel University, USA)
P-9	Bi-based Mitigation of Concrete Corrosion in Marine Environments Using Bacterial Activity	Parsa Namakiaraghi, Geetika Mishra, Irene Verdu, S. Musfirah, Ahmad Najafi, Chris Sales, and Yaghoob (Amir) Farnam (Drexel University, USA)
P-10	Design and Material Principles for Autonomous Alignment and Healing Multilayer Soft Electronics	Alexandra L. Ramos Figueroa, Christopher B. Cooper, Samuel E. Root, Lukas F. Michalek, Hyunchang Park, Yuran Shi, Jian Qin, and Zhenan Bao (Stanford University, USA)
P-11	Vascularized Microbial Systems for Self-Healing Concrete: Experiments and Phase-Field Modeling	Li Meng, Alireza Ashkpour (Drexel University, USA), Hsiao Wei Lee (National Cheng Kung University, Taiwan), and Ahmad Najafi (Drexel University, USA)
P-12	Numerical Study of Prolonged Crack Healing in Concrete with Microencapsulated Healing Agents	Alireza Ashkpour, Li Meng (Drexel University, USA), Hsiao Wei Lee (National Cheng Kung University, Taiwan), and Ahmad Najafi (Drexel University, USA)
P-13	Beyond Crack Filling: Predicting the Post-Healing Fracture Behavior of MICCP-Treated Cementitious Composites	Hsiao Wei Lee (National Cheng Kung University, Taiwan), Seyed Ali Rahmaninezhad, Li Meng, Alireza Ashkpour, Mohammad Irfan Iqbal, Geetika Mishra (Drexel University, USA), Wil V. Sruhar, Mija H. Hubler (University of Colorado, Boulder, USA), Christopher M. Sales, Yaghoob Amir Farnam, and Ahmad Najafi (Drexel University, USA)
P-14	Beyond bacteria: what really drives carbonate-based self-healing in cementitious cracks	Martyna Janek (Lublin University of Technology, Poland), Joanna Fronczyk (Warsaw University of Life Sciences-SGGW, Poland), and Wojciech Franus (Lublin University of Technology, Poland)

Philadelphia City Map



- 1 **Bossone Research Enterprise Center (Conference Venue)**
- 2 **Museum of the American Revolution (Gala Dinner)**
- 3 **The Study at University City (Hotel)**
- 4 **Independence Hall**
- 5 **Liberty Bell**
- 6 **The Franklin Institute**
- 7 **Rocky Statue and Phil. Museum of Art**
- 8 **Schuylkill River Trail**
- 9 **City Hall**

Drexel Campus Map



**Bossone Research
Enterprise Center
(Conference Venue)**

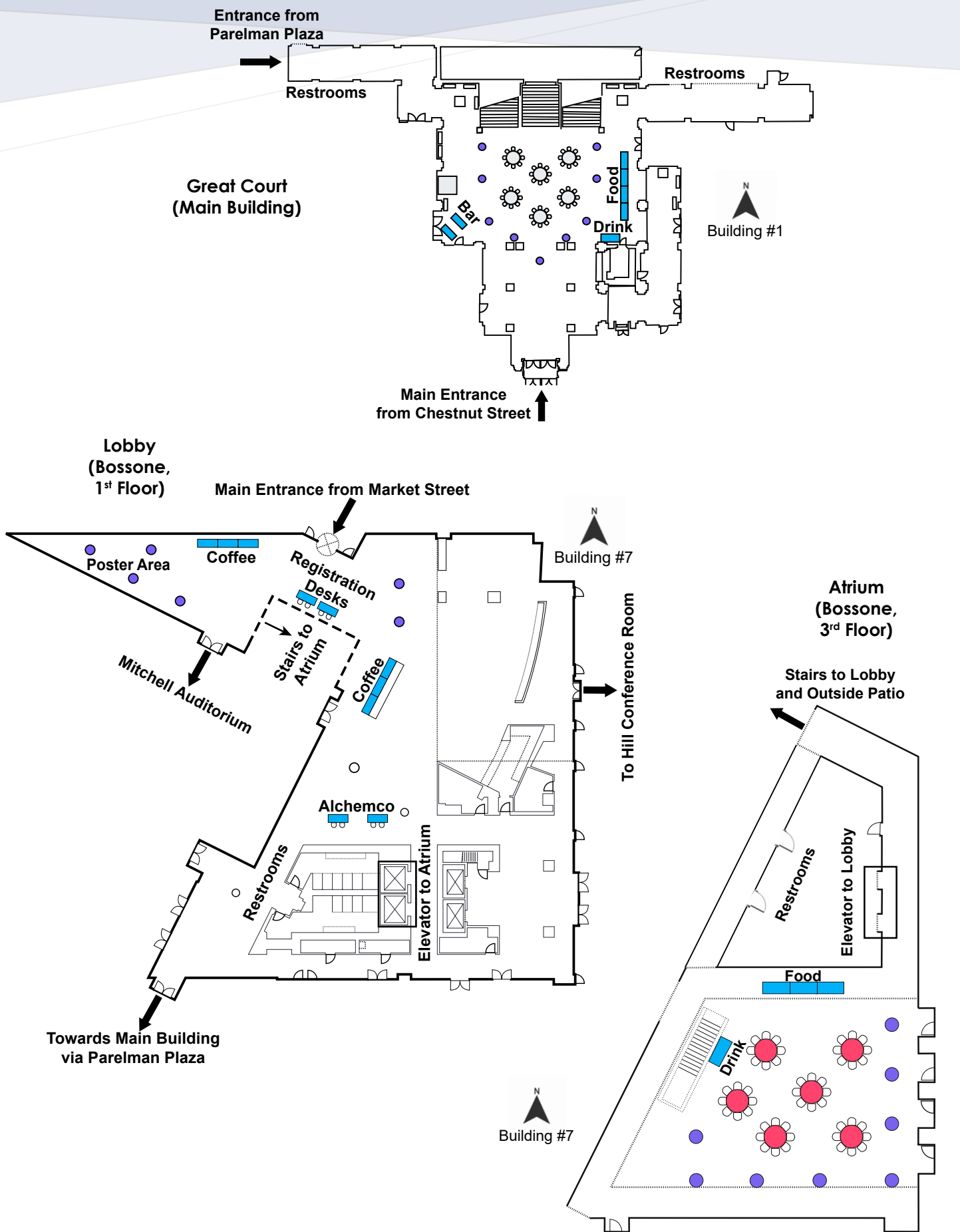


**Main Building
(Opening Reception Venue)**



**The Study at
University City
(Hotel)**

Conference Venue Maps



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See you at ICSHM2028!