PROGRAM

9th international conference on self-healing materials

Madrid 24 • 26 june 2024

MADRID, JUNE 24 - 26 2024

ICSHM

9TH INTERNATIONAL CONFERENCE ON SELF-HEALING MATERIALS

Monday, june 24th

9:00 - 9:40	**Registration** · Entrance hall, Institute Blas Cabrera (119, Serrano St.)
9:40 - 10:00	**Opening Ceremony** · Plenary room, Institute Blas Cabrera
10:00 - 10:40	**Keynote Talk** · **Sponsored by COMUNIDAD DE MADRID** *New Generals of Self-Healable Polymers; Recent Advances and Opportunities.* **Prof. Marek Urban. Clemson University, USA |** *Chair: Marianella Hernández* Plenary room, Institute Blas Cabrera, 119, Serrano St.

10:40 - 11:20	**Room 1, Plenary** Institute Blas Cabrera	**Room 2, No. 6011** Pinar 25 Building	**Room 3, No. 6121** Pinar 25 Building
Chair	Marek Urban	Jason Patrick	Olga Speck
10:40 - 11:00	**Sust1:** Self-Healing Materials For Reconfigurable Soft Modular Origami Robots. L. Mena, Carlos III Univ. Spain	**Fund1:** Exploration of Innovative Methodologies for the Incorporation of Thermoplastics as a Healing Agent in Carbon Fibre-Reinforced Epoxy Composites. M. Peñas, CSIC. Spain	**Bio1:** Biological Self-Repair in Fungal Engineered Living Materials: A Study of the Viability and Regeneration of Ganoderma Spp. E. Elsacker, Vrije Univ. Brussel. Belgium
11:00 - 11:20	**Sust1:** Fast Autonomous Self-Healing At Room Temperature In Diels-Alder Elastomers For Soft Robotics And Flexible Sensors. S. Terryn, Vrije Universiteit Brussel. Belgium	**Fund1:** Thermoreversible Thiomaleimide Photodimers: A New Chemistry Platform for Covalent Polymer Bonding, Debonding and Rebonding. H. Houck, Univ. of Warwick. UK	**Bio1:** Effects of Marine Microorganisms on Cementitious Materials in the Marine Environment and their Utilization. H. Makita, Tokyo Univ. of Marine Science and Technology. Japan
11:20 - 12:00	**Coffee Break** · Sponsored by **CABOT CORP** Registration for late arrivals *Residencia de Estudiantes, CSIC*		
12:00 - 12:40	**Keynote Talk:** *Recent Advances in Self-Healing Cementitious Materials: From Product Synthesis to Field Deployment.* **Prof. Abir al Tabbaa. Cambridge University, UK	** *Chair: Nele de Belie* Plenary room, Institute Blas Cabrera. 119, Serrano St.	

Monday, june 24th

12:40 - 13:40	**Room 1, Plenary** Institute Blas Cabrera	**Room 2, No. 6011** Pinar 25 Building	**Room 3, No. 6121** Pinar 25 Building
Chair	Veronique Michaud	Maria Cruz Alonso	Ranjita Bose
12:40 - 13:00	**Sust1:** Towards The Design Of Stretchable Encapsulants For Self-Healing Liquid Metal-Based Electronics Using Blended Diels-Alder Networks. F. Sahraeeazartamar,Vrije Universiteit Brussel. Belgium	**Fund1:** Low Cost Macrocapsules for the Healing of Large Concrete Cracks. E. Cailleaux, Buildwise. Belgium	**Sust11:** Boronic Ester-Polyurethane Coatings as Durable, Autonomous and Repeatble Self-Healing Coatings for Extreme Environments. R. Varley, Deakin University. Australia
13:00 - 13:20	**Sust2:** Pyrrolidinium-Based Poly(Ionic Liquid) Gel Electrolytes. A. Marinow, Martin Luther University Halle-Wittenberg. Germany	**Fund2:** Bacteria Based Self-Healing in Cement: A New Microbe-Mineral Simulator. A. Alex, UPV/EHU and Newcastle University. UK	**Sust3:** Microencapsulation of Diisocyanates by Infiltration for Application in Self-Healing Coatings. S. Pezzin, Santa Catarina State Univ. Brazil
13:20 - 13:40	**Sust2:** Self-Healing Vitrimeric Poly(Ionic Liquid) Electrolytes. Z. Katcharava, Martin Luther University Halle-Wittenberg. Germany	**Fund2:** Mesoscale Modelling of Dynamic Split Tensioning of Microcapsule Concrete. X. Zhou, Shenzhen University. China	**Sust3:** Water-Reactive Core-Shell Nanofibers for Self-Healing Corrosion Protective Coatings. N. Spera, INL International. Portugal
13:40 - 15:00	**Lunch** · Residencia de Estudiantes, CSIC		
15:00 - 15:40	**Round Table on Standarization** **Prof. W. Nakao. Yokohama National Univ., Japan** | *Chair: Santiago García* Plenary room, Institute Blas Cabrera. 119, Serrano St.		

Monday, june 24th

15:40 - 17:20	Room 1, Plenary Institute Blas Cabrera	Room 2, No. 6011 Pinar 25 Building	Room 3, No. 6121 Pinar 25 Building
Chair	Russell Varley	Antonio Grande	Nele de Belie
15:40- 16:00	**Sust7:** A Comparative Analysis of Ionically Crosslinked XNBR Composites Reinforced with Conventional and Eco-Friendly Fillers. S. Utrera, CSIC. Spain	**Fund1:** Sunlight Driven Photochemical Self-Healing of Polymers. M.Q. Zhang, Sun Yat-sen Univ. China	**Sust3:** Antimicrobial Self-Healing Concrete Enhanced by Chemical Protective Coating for Wastewater Structures. E. Minoru,Instituto Tecnologico de Aeronautica. Brazil
16:00- 16:20	**Sust7:** Innovative Compatibilizers for Enhanced Multilayer Plastic Recyclability. M. Herrero, University of Valladolid. Spain	**Fund1:** Self-Healing in Ultra-Ductile High-Strength Cementitious Materials and Structural Components. M. Li, University of California, Irvine. USA	**Sust3:** Fungi-Mediated Self-Healing Concrete: Influence of Alkaline and Cementitious Conditions on Fungal Survival and Growth. A. Van Wylick, Vrije Universiteit Brussel. Belgium
16:20 - 16:40	**Sust7:** Self-Healing Assessment and Durability Performance of a Recycled UHPC Exposed to Chlorides. M. Davolio, Politecnico of Milan. Italy	**Fund2:** Reactive Transport Modeling: Insights into Chemical Processes Driving Self-Healing of Concrete. D. Lahmann, Helmut-Schmidt Univ. Hamburg. Germany	**Sust11:** Challenges in Achieving Effective Self-Healing for Cement-Based Materials. M. Wu, Aarhus University. Denmark
16:40 - 17:00		**Fund1:** Tuning Network Mobility through Double Diels-Alder in Furan-Maleimide Networks. P. van den Tempel, Univ. of Groeningen. The Netherlands	**Sust3:** Making Possible the Use of Organic Inhibitors in Organic Coatings for Active Corrosion Protection. J. Zhao, Delft University of Technology. The Netherlands
17:00 - 17:20			Steering Committee Meeting
18:30 - 20:00	**Welcoming Reception** · Casa Suecia Roof Top. 4, Marqués de Casa Riera St.		

Tuesday, june 25th

9:00 - 9:40	**Keynote Talk** · Sponsored by SUMITOMO RIKO *Evaluation of Dynamic Elastomer-Filler Network Reversibility via Multiscale Rheology.* **Prof. Chaoying Wan. University of Warwick, UK** | *Chair: Marianella Hernández* Plenary room, Institute Blas Cabrera, 119, Serrano St.

9:40 - 11:00	**Room 1, Plenary** Institute Blas Cabrera	**Room 2, No. 6011** Pinar 25 Building	**Room 3, No. 6121** Pinar 25 Building
Chair	Chaoying Wan	Mo Li	Thomas Speck
9:40 - 10:00	**Sust4:** Self-Healing Flexible Materials for Large Inflatable Structures. A. Grande, Politecnico di Milano. Italy	**Fund3:** Impact Resistance of Self-Healing Fibre Reinforced Concrete. N. de Belie, Ghent University. Belgium	**Bio2:** The Fast Coagulating Latex in Campanula. S. Kruppert, University Freiburg. Germany
10:00 - 10:20	**Sust4:** Self-Healing Transparent Poly(Dimethyl)Siloxane For Space Applications. A. Llevot, University of Bordeaux. France	**Fund3:** Novel in-Situ Non-Destructive Evaluation Technique of Self-Healing Concrete using THz/Sub-THz Wave Reflectance Imaging. C. Kobayashi, Tohoku University. Japan	**Bio2:** Bio-Inspired Programmable Mechanical Metamaterial with Self-Sealing Ability. N. Ghavidelnia, Living, Adaptive and Energy-autonomous Materials Systems. Germany
10:20 - 10:40	**Sust8:** MWCNTs/ZnO Hybrid Filler for Application in Polymer Composites with Sensing and Self-Healing Properties. M. Colombo, Univ. of Milano-Bicocca. Italy	**Fund4:** New Insights into the Self-Healing of Creep Damage in Fe-Au. H. Fang, European Synchrotron Radiation Facility. France	**Bio1:** Development of Epoxy Core Self-Healing Sandwich Composite Structure for Structural Applications. S. Jung-Il, CWNU. South Korea
10:40 - 11:00	**Sust8:** Self-Healing Polymeric Nanocomposites with Al2O3 Based Filler for Thermal Conductive Applications. S. Faina, Univ. Of Milano-Bicocca. Italy	**Fund4:** The Effect Of Crystalline Admixtures On The Hydration Of Cementitious Materials And The Potential Self-Healing Properties. E. Tsampali, Aristotle University of Thessaloniki. Greece	**Bio1:** Performance Assessment of Cementitious Matrix Reinforcement with Multifunctional Bacterial-Laden Fibers (BioFibers). M. H. Khaneghahi, Drexel University. USA
11:00 - 11:40	**Coffee Break** · Sponsored by **CABOT CORP** Registration for late arrivals *Residencia de Estudiantes, CSIC*		

Tuesday, june 25th

11:40 - 12:20	**Keynote Talk:** *Dynamic Polymers as Electrolytes: Vitrimeric and Self-Healing Materials.* **Prof. Wolfgang Binder. Martin-Luther University Halle -Wittenberg, Germany** | *Chair: Raquel Verdejo* Plenary room, Institute Blas Cabrera. 119, Serrano		
12:20 - 13:20	**Room 1, Plenary** Institute Blas Cabrera	**Room 2, No. 6011** Pinar 25 Building	**Room 3, No. 6121** Pinar 25 Building
Chair	Fabio Cicoira	Etelvina Javierre	Suman Thakur
12:20 - 12:40	**Sust8:** Thermal Conductivity and Electrical Insulation Property Evaluation of Self-Healing Alumina/Epoxy Resin Composites using Microcapsules. Y. Nassho, Toyama Prefectural Univ. Japan	**Fund2:** Breaking Down the Building Blocks: A Multi-Scale Model for Self-Healing Polymers Based on Diels-Alder Reactions. L. Vermeersch, Vrije Univ. Brussel. Belgium	**Sust6:** Thermo-Reversible Nano-Adhesives based on Diels-Alder Reaction via Initiated Chemical Vapor Deposition. J. Guo, Univ. of Groeningen. The Netherlands
12:40 - 13:00	**Sust8:** Synthesis and Optimization of Conductive Inks for Screen Printing Stretchable Self-Healing Sensors. V. Lozano, Vrije Univ. Brussel. Belgium	**Fund2:** Modelling of Diffusion-Controlled Diels-Alder Reversible Network Formation and its Application to Cure Diagrams. J. Mangialetto, Vrije Univ. Brussel. Belgium	**Sust6:** Metallopolymers with Water-Induced Healing and Interfacial Adhesion. E. Kaymazlar, Delft Univ. of Technology. The Netherlands
13:00 - 14:00	Guided visit to Residencia de Estudiantes, CSIC		
14:00 - 15:00	**Lunch** • Residencia de Estudiantes, CSIC		
15:00 - 15:40	**Keynote Talk:** *Intrinsic Self-Healing Composites: From Lab to Market.* **Dr. Amaël Cohades, CompPair Technologies Ltd, Switzerland** | *Chair: Santiago García* Plenary room, Institute Blas Cabrera. 119, Serrano St.		

Tuesday, june 25th

15:40 - 17:00	Room 1, Plenary Institute Blas Cabrera	Room 2, No. 6011 Pinar 25 Building	Room 3, No. 6121 Pinar 25 Building
Chair	Wolfgang Binder	Amaël Cohades	José Norambuena-Contreras
15:40 - 16:00	**Sust8:** Asymptotic Self-Healing Supports Perpetual Fracture Repair in Structural Fiber-Composites. J. Turicek, North Carolina State Univ. USA	**Fund5:** Achieving self-repairing properties without compromising environmental sustainability. J.C. Chicharro, CSIC. Spain	**Sust11:** Self-Healing Concrete: Lab Research and Full Scale Application. E. Schlangen, Delft. Univ of Technology. The Netherlands
16:00 - 16:20	**Sust8:** Self-Healing, Stretchable and Recyclable Electronics. F. Cicoira, Polytechnique Montréal.Canada	**Fund5:** Development of Bio-Based and Self-Healing Thermoplastic Elastomers. I. Mas-Giner, CSIC. Spain	**Sust11:** Autonomous and Autogenous Self-Healing Benefits for Chloride Ingress in Cracked Reinforced Concrete. M.C. Alonso, CSIC. Spain
16:20 - 16:40		**Fund5:** Enhanced Durability, Processability, and Recyclability Through Biobased Additives in Environmentally-Friendly Elastomers. L. Lenzi, University of Bologna. Italy	**Sust11:** Long Term Capability of Self-Healing of Bacterial Mortars in Wastewater. M. Bagga, Newcastle University. UK
16:40 - 17:00		**Fund5:** Self-Healing Materials with Creep Resistance by Combining Associative and Dissociative Dynamic Covalent Bonds. A. Costa, Vrije Univ. Brussel. Belgium	**Sust11:** Long-Term Stability of Self-Healing Cementitious Systems with Macroencapsulated Polyurethane under Accelerated Aging via Thermal Cycling. G. Anglani, Politecnico di Torino. Italy
19:30 - 23:00	**Gala Dinner** Bus service from CSIC. *Duques de Pastrana Palace. 2, Platería St.*		

Wednesday, june 26th

9:00 - 9:40

Keynote Talk: Prevention and Management of Damage: A Technical Challenge Solved by Plants?
Prof. Olga Speck. University of Freiburg, Germany
| *Chair: Miguel Angel López Manchado*
Plenary room, Institute Blas Cabrera, 119, Serrano St.

9:40 - 11:00	Room 1, Plenary Institute Blas Cabrera	Room 2, No. 6011 Pinar 25 Building	Room 3, No. 6121 Pinar 25 Building
Chair	Seppe Terryn	Joost Brancart	Olga Speck
9:40 - 10:00	**Sust5:** Characterization of the Healing Ability and the Mechanical Properties of a New High Strength Healable Aluminium Alloy Produced by Additive Manufacturing. A. Simar, Univ. Catholique de Louvain. Belgium	**Fund6:** Self-Healing with Spraying High Temperature Steam for Reuse of Structural Ceramics. W. Nakao, Yokohama National University. Japan	**Bio1:**Damage Prevention, Damage Control and Damage Management in Plant Tissues and Organs: Liana Tendrils and Citrus Peels as Role Models for Bioinspired Materials Systems. T. Speck, University of Freiburg. Germany
10:00 - 10:20	**Sust5:** Fused Granulate Fabrication of Polymer Networks Based on Associative and Dissociative Dynamic Covalent Bonds. F. Furia, Vrije Universiteit Brussel. Belgium	**Fund6:** Comparative Analysis of the Environmental Impact of Self-Healing Tire Rubber-SBR Composites and Conventional Rubber Through Life Cycle Analysis. L.A. Pastor, University of Valladolid. Spain	**Bio1:** Microfluidic Networks in Soft Materials Systems: A Route to Adaptive Processes, Self-Regulation and Self-Repair. T. Pfohl, University of Freiburg. Germany
10:20 - 10:40	**Sust5:** A Self-Healing Gelatin-Based Nanocomposite Hydrogel for Three-Dimensional Printing. P. Heidarian, Deakin University. Australia	**Fund5:** Asphalt Self-Healing Adding a Waste Tyres-Based Rejuvenator. J. Norambuena-Contreras, Swansea University. UK	**Sust3:** Sustainable surfaces with self-healing properties. A. Abreu, Centre of Nanotechnology and Smart Materials. Portugal
10:40 - 11:00	**Sust5:** Determining the Printability Window of Polymer Hydrogels Employed as Biomaterial Inks for 3D Extrusion Printing through Oscillatory Rheology. R. Hernández, CSIC. Spain	**Fund5:** Bio-based Non-Isocyanate Polyurethane Vitrimer with Closed-loop Recyclability and Self-Healing Abilities. S. Thakur, CSIC. Spain	

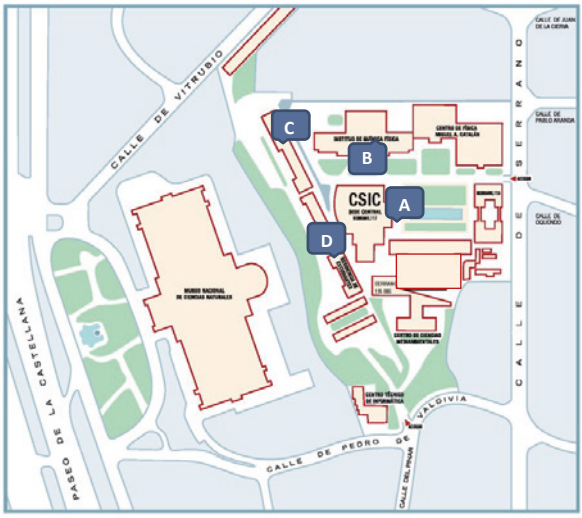
Wednesday, 26th june

11:00 - 11:40	**Coffee Break** · Sponsored by **CABOT CORP** Registration for late arrivals Residencia de Estudiantes, CSIC		
11:40 - 13:20	**Room 1, Plenary** Institute Blas Cabrera	**Room 2, No. 6011** Pinar 25 Building	**Room 3, No. 6121** Pinar 25 Building
Chair	Raquel Verdejo	Aude Simar	Erik Schlangen
11:40 - 12:00	**Sust5:** Self-Healing Performance of Ductile-Porous Vascular Networks in Terms of Chloride Ingress: A Trial on Large-Scale Beams. Y. Shields, Ghent University. Belgium	**Fund5:** Repetitive Self-Healing of Concrete with Carbon Sequestration and Calcium Extraction. X. Wang, Shenzhen University. China	**Sust11:** Construction of Self-Healing Vasculature System in Concrete by Embedded Direct-Printing with Emulsion or Emulgel Inks. G. Zhu, Shenzhen Univ. China
12:00 - 12:20	**Sust10:**Life Cycle Environmental Impact of Self-Healing Materials in Soft Robotics. J. Brancart, Vrije Universiteit Brussel. Belgium	**Fund5:** Enhancing Self-Healing Materials through Design of Experiments Methodology. K. Nuñez, University of Valladolid. Spain	**Sust11:** Liquid Marbles Encased in Inorganic Shell Microcapsules via Interface Reaction and their Use in Self-Healing Concrete. G. Zhu, Shenzhen Univ. China
12:20 - 12:40	**Sust10:** Development of Self-Healing Adhesives for Wind Turbine Applications. V. Michaud, EPFL. Switzerland	**Sust9:** Self-Healing Piezoresistive Sensors based on Diels-Alder Polymers with Embedded Liquid Metal. E. Mirabdollah, Vrije Univ. Brussel. Belgium	**Sust11:** Investigation of the Self-Healing Effect of Mortar using Bacillus Subtilis-Loaded SHIRASU. K. Koike, Port and Airport Institute. Japan
12:40 - 13:00	**Sust10:** Supramolecular Self Healing in Action. A. Bosman, SupraPolix BV. The Netherlands	**Sust9:** Opto-Vascular Synchrony for Autonomous Self-Healing and Self-Sensing in a Structural Thermoset. Z. Phillips, North Carolina State Univ. USA	**Sust11:** T. Experimental Investigation of Self-Healing Effect of Mortar Mixed with Bacillus Subtilis and Biodegradable Plastic. Nishida, Shizuoka Institute of Science and Technology. Japan

Wednesday, 26th june

13:00 - 13:20	**Sust10:** Self-Healing Materials for Flexible Electronics. N. Tiwari, Univ. Santiago de Compostela. Spain	**Sust9:** Delayed Reporting of Mechanical Changes in Self-Sensing Microcapsule Composites. D. Schwarz, University of Freiburg. Germany	**Sust11:** Isolation of Highly Alkaline-Resistant Bacteria for Contribution of the Self-Healing Materials in Concrete. T. Nakamura, Hazama Ando Corp. Japan
13:30 - 13:50	**Closing Ceremony** Marianella Hernández and Santiago García *Plenary room, Institute Blas Cabrera. 119, Serrano St.*		

Venue & Locations



Spanish National Research Council – CSIC
117, Serrano St
Madrid

- A — Central Building
- B — Institute Blas Cabrera
  119, Serrano St
- C — Pinar 25
  Parallel sessions
- D — Coffee Breaks / Lunch

Social Activities

Coffee breaks & lunch will take place in the **Residencia de Estudiantes of CSIC**. A guided visit to this symbolic building will be offered on Tuesday at 13:00.

A **Welcoming Cocktail** will be served at **Casa Suecia**, one of the most exclusive Roof Tops of Madrid. *Calle del Marqués de Casa Riera, nº 4. 28014 Madrid.*

A **Gala Dinner** will be offered at **Duques de Pastrana Palace**, a historical and cultural site representative of Madrid's heritage. *Calle Platerías, nº 2. 28016 Madrid*

Venue & Locations

ORGANIZATION

CSIC
Consejo Superior de Investigaciones Científicas

TU Delft
Delft University of Technology

SUPPORTING ORGANIZATIONS

AEMAC
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RPM
Revista Plásticos Modernos

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VIAJES El Corte Inglés
CONGRESOS

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