



# NICOM8

## The Eighth International Symposium on Nanotechnology in Construction Materials

Celebrating twenty years of groundbreaking development

*“The Path to Decarbonization Through Nanotechnology – Achieving Carbon Net-negative Production”*

Introducing the Eighth International Symposium on Nanotechnology in Construction Materials (NICOM-8), taking place in Catania, Italy – an ancient port city on Sicily’s eastern coast near the active volcano Mt. Etna, one of the original producers of pozzolan and nanoparticles. The theme of this year’s conference is “The Path to Decarbonization Through Nanotechnology – Achieving Carbon Net-negative Production.” Preceding NICOM-8, RILEM TC 302-CNC will host the “World of Carbon-Based Nanomaterials in Concrete,” an exclusive one-day workshop on June 18. Participants will take an immersive journey into the fascinating realm of carbon-based nanomaterials and their revolutionary applications in the field of concrete.

Nanomodification and nanoengineering have demonstrated the potential for dramatically improving the tensile strength, toughness, ductility, and durability of modern construction materials such as concrete, structural steel, polymers and composites, asphalt, glass, and ceramic materials. The NICOM Symposia were designed to explore the impact of nanotechnology on the behavior and performance of construction materials and to envision their future and applications. As we look back on 20 years of accomplishment in this field, we must also look into the future to envision the needs of a changing global economy and ecology.

While progress has been made in optimizing building materials to maximize production efficiency and lifecycle and to reduce energy inputs and carbon outputs, the demands of the future require even further progress. In order to truly provide for the needs of the future, we must endeavor not just for carbon neutrality but also for a net-negative carbon footprint throughout humankind’s most massively produced materials necessary for buildings and infrastructure. Decarbonization through nanotechnology offers a strong path forward, from the use of clean energy in the production of building materials to carbon sink applications.

For this 20th anniversary NICOM Symposium, we invite global leaders in research, education, and industry to bring forth your biggest ideas and research for creating the path to decarbonization through nanotechnology, with the goal of achieving a negative carbon footprint in the construction and building materials industry.

---

## SYMPOSIUM DEADLINES

Submission of  
250-word abstract:  
**September 22, 2023**

Notification of  
acceptance:  
**October 20, 2023**

Submission of  
manuscript:  
**December 20, 2023**

Early  
registration:  
**by March 29, 2024**

---



# July 8 – 11, 2024 - Catania, Italy

## Call for Papers

Potential topics for the NICOM-8 symposium illustrate a broad range of ideas and potential applications of nanotechnology to challenging problems with construction materials:

- Production, functionalization, and performance of nanomaterials: nanoparticles, nanotubes, and 2D nanostructures for application in construction;
- Investigation of the internal structure and properties of construction materials at the nanoscale and the relation of these parameters to performance at the macroscale;
- Instrumentation, techniques, and metrology for nanoscale investigation;
- Nanomodification of composite materials, including functional films and nano-coatings;
- Nano-assembly and “bottom-up” design;
- Modeling and simulation from nano to macro;
- Nanotechnology for high-strength, high-performance, and ultra-high-performance applications;
- Nanotechnology for fiber-reinforced composites;
- Nanomaterials for the ultimate enhancement of durability;
- Biomimetic, nanocomposite, and metamaterials;
- Self-repairing and self-healing applications;
- Smart and intelligent infrastructure materials, including nanosensors for real-time monitoring of structural health in buildings;
- Photocatalysis, air-purifying, and self-cleaning applications;
- Nanomaterials for digital construction and 3D printing;
- Nanotechnology and nanomaterials for low carbon footprint and net-negative infrastructure;
- Nanotechnology for energy harvesting and renewable energy;
- Nanotechnology-enabled green materials and by-product utilization for new levels of sustainability;
- Field application of nanomaterials and nanoengineered construction materials;
- Health, safety, and environmental effects related to the application of nanomaterials.

These research subjects will be discussed during the keynote, plenary, and regular sessions.

## Who Should Attend

The first symposium (NICOM-1) was held in 2003 in Paisley, Scotland. Organized by the Scottish Centre for Nanotechnology in Construction Materials, NICOM-1 was instituted to exchange ideas and scientific results vital for implementing nanotechnology concepts in construction.

Following the success of the subsequent NICOM symposia, the world's leading researchers in the field of nanotechnology of cement, concrete, and other construction materials will be brought together once again at NICOM-8.

NICOM-8 will provide opportunities for participants to gain exposure to cutting-edge research conducted in Europe, the Americas, Asia, and other countries, reported by the top investigators in the field. The attendance of engineers, researchers, scientists, students, and industry executives is vital for the success of the NICOM-8 symposium, bringing research results to the community and allowing engineers and scientists to evaluate and implement these discoveries. The global connections garnered here will lead to the generation of new ideas, greater interactions, and active collaborations.

## NICOM8 Committees

### Chairs

Giuseppe A. Ferro, Italy  
Luciana Restuccia, Italy  
Liberato Ferrara, Italy

Maria S. Konsta-Gdoutos, USA  
Surendra P. Shah, USA  
Konstantin Sobolev, USA

### Advisory Committee

Peter J.M. Bartos, UK  
Yolanda R. de aMiguel, Spain  
Jiri Nemecek, Czech Republic

Antonio Porro, Spain  
Chi-Sun Poon, China  
Wenhui Duan, Australia

### Scientific Committee

Maria S. Konsta-Gdoutos, USA (Chair)  
Nemkumar Banthia, Canada  
Nele De Belie, Belgium  
Henry Van Damme, France  
Jorge S. Dolado, Spain  
Liberato Ferrara, Italy  
Emanuela Del Gado, USA  
Brian Green, USA  
Marwa M. Hassan, USA  
Pengkun Hou, China  
Katerina Ioannidou, France  
Shiho Kawashima, USA  
Kamal Khayat, USA  
Konrad Krakowiak, USA

Kimberly Kurtis, USA  
Wengui Li, Australia  
Marco Liebscher, Germany  
Luna Lu, USA  
Viktor Mechtcherine, Germany  
Oscar Mendoza, Brazil  
Anol Mukhopadhyay, USA  
Jose F. Munoz, USA  
Jan Olek, USA  
Roland Pellenq, France/USA  
Mohammad J. Qomi, USA  
Florence Sanchez, USA  
Erik Schlangen, Netherlands  
Geert De Schutter, Belgium

Xianming Shi, USA  
Lok P. Singh, India  
Mohammed Sonebi, UK  
Dietmar Stephan, Germany  
Arezki Tagnit-Hamou, Canada  
Mahmoud Reda Taha, USA  
Pavel Trtik, Switzerland  
Mine Ucak-Astarlioglu, USA  
Franz-Josef Ulm, USA  
Kejin Wang, USA  
Charles A. Weiss, USA  
Jason Weiss, USA



**July 8 – 11, 2024 - Catania, Italy**

## Financial Support

Concrete Nanotechnology and Nanoscience Society, CNNS

## ACI/RILEM Committees

- ACI 241, Nanotechnology-of Concrete;
- RILEM TC 302- CNC, Carbon-based nanomaterials for multifunctional cementitious matrices.

## Participating Supporters

- Center for Advanced Construction Materials, University of Texas at Arlington;
- Concrete Sustainability and Resilience Center, University of Wisconsin-Milwaukee;
- Center for Nanotechnology in Cementitious Systems, Iowa State University;
- American Concrete Institute;
- Graphene Council;
- National Institute of Standards and Technology;
- International Society for Concrete Pavements;
- Engineering Mechanics Institute, American Society of Civil Engineers;
- National Ready Mixed Concrete Association;
- Portland Cement Association;
- RILEM - International Union of Laboratories and Experts in Construction Materials, Systems, and Structures.

Organized by:



**Politecnico di Torino**



**POLITECNICO MILANO 1863**