



SMAR 2024 – 7th International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures

Editorial – SMAR 2024

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The International Conference on *Smart Monitoring, Assessment, and Rehabilitation of Civil Structures* (SMAR) serves as a global platform for scientists, engineers, enterprises, and infrastructure managers to present and discuss advancements in testing and monitoring technology, structural modelling and assessment methods, and the application of advanced materials for structural rehabilitation.

SMAR 2024, the seventh conference in this series, was held in Salerno, Italy, from 4 to 6 September 2024. It was co-organized by the University of Salerno (UniSA), Italy, and the Swiss Federal Laboratories for Materials Science and Technology (Empa), Switzerland. The SMAR conference series was launched in 2011 in Dubai, UAE, and followed up in Istanbul, Turkey (2013), Antalya, Turkey (2015), Zurich, Switzerland (2017), Potsdam, Germany (2019), and Shanghai, China (2022).

The SMAR2024 International Scientific Committee (ISC, Table 1) received almost 400 abstracts and, after a rigorous review process involving at least two reviewers for each paper, accepted 280 full papers. Researchers from institutions across more than 35 Countries (Fig. 1) contributed to the proceedings. The conference hosted more than 250 scientists and experts worldwide to present their solutions and findings in the following areas:

- Structural health monitoring;
- Performance and damage assessment;
- Damage control;
- Structural strengthening and repair;
- Durability issues related to harsh environments;
- Shape memory alloys in civil structures;
- Practical applications and case studies.

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Table 1: SMAR 2024 International Scientific Committee

First Name	Last Name	Affiliation	Country	First Name	Last Name	Affiliation	Country
Riadh	Al-Mahaidi	Swinburne University of Technology	Australia	Maria Pina	Limongelli	Politecnico di Milano	Italy
Giuseppina	Amato	Queen's University Belfast	UK	Ken J.	Loh	University of California - San Diego	USA
Ueli	Angst	ETH Zurich	Switzerland	Geert	Lombaert	KU Leuven	Belgium
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Jan	Bien	Wroclaw University of Technology	Poland	Enzo	Martinelli	University of Salerno	Italy
Antonio	Bilotta	University of Naples "Federico II"	Italy	Urs	Meier	Empa	Switzerland
Matteo	Breveghieri	Empa	Switzerland	Marco	Menegotto	CIPRA srl	Italy
Bruno	Briseghella	Fuzhou University	China	Julien	Michels	re-fer AG	Switzerland
Andreas	Brunner	Empa	Switzerland	Ayaho	Miyamoto	Yamaguchi University	Japan
Antonio	Caggiano	University of Genoa	Italy	Barzin	Mobasher	Arizona State University	USA
Zehra	Canan Girgin	Yildiz Technical University	Turkey	Masoud	Motavalli	Empa	Switzerland
Erdem	Canbay	Middle East Technical University	Turkey	John	Myers	Missouri University	USA
Christian	Carloni	Case Western Reserve University	USA	Antonio	Nanni	University of Miami	USA
Joan Ramon	Casas	Polytechnic University of Catalonia	Spain	Emidio	Nigro	University of Naples "Federico II"	Italy
Zekai	Celep	Istanbul Technical University	Turkey	Ehsan	Noroozinejad	University of British Columbia	Canada
Oguz Cem	Celik	Istanbul Technical University	Turkey	Eva	Oller	Polytechnic University of Catalonia	Spain
Eleni	Chatzi	ETH Zurich	Switzerland	Piotr	Omenzetter	University of Aberdeen	UK
Dawn	Cheng	University of California - Davis	USA	Kutay	Orakcal	Bogazici University	Turkey
Dimitrios	Chronopoulos	KU Leuven	Belgium	Costas	Papadimitriou	University of Thessaly	Greece
Antoni	Cladera	University of the Balearic Islands	Spain	Carlo	Pellegrino	University of Padua	Italy
Pierluigi	Colombi	Politecnico di Milano	Italy	Marco	Pepe	University of Salerno	Italy
Alvaro	Cunha	University of Porto	Portugal	Yuri	Petryna	TU Berlin	Germany
Christoph	Czaderski	Empa	Switzerland	M. Dolores	G. Pulido	Eduardo Torroja Institute - CSIC	Spain
Tommaso	D'Antino	Politecnico di Milano	Italy	Muhammad K.	Rahman	King Fahd University of Petroleum	Saudi Arabia
Marco	Di Prisco	Politecnico di Milano	Italy	Saim	Raza	Empa	Switzerland
Stephanos	Dritsos	University of Patras	Greece	M. Saiid	Saiidi	University of Nevada - Reno	USA
Tamer	El Maaddawy	United Arab Emirates University	UAE	Prabir	Sarker	Curtin University	Australia
Raafat	El-Hacha	University of Calgary	Canada	Halil	Sezen	Ohio State University	USA
Liberato	Ferrara	Politecnico di Milano	Italy	Behrouz	Shafei	Iowa State University	USA
Emmanuel	Ferrier	University "Claude Bernard" - Lyon 1	France	Moslem	Shahverdi	Empa	Switzerland
Francesco	Focacci	eCampus University	Italy	Ian F.C.	Smith	TU Munich	Germany
Paula	Folino	University of Buenos Aires	Argentina	Scott	Smith	University of Adelaide	Australia
Mariaenrica	Frigione	University of Salento	Italy	Serdar	Soyoz	Bogaziçi University	Turkey
Jing	Gao	Xiamen University	China	Flavio	Stochino	University of Cagliari	Italy
Elyas	Ghafoori	University of Hannover	Germany	Andreas	Taras	ETH Zurich	Switzerland
Amir K.	Ghorbani-Tanha	University of Tehran	Iran	Giovanni	Terrasi	Empa	Switzerland
Mark	Green	Queen's University	Canada	Romildo Dias	Toledo Filho	Federal University of Rio de Janeiro	Brazil
Xianglin	Gu	Tongji University	China	Nicola	Tosic	Polytechnic University of Catalonia	Spain
Issam E	Harik	University of Kentucky	USA	Thanasis	Triantafillou	University of Patras	Greece
Alper	Ilki	Istanbul Technical University	Turkey	Filippo	Ubertini	University of Perugia	Italy
Daniele	Inaudi	Smartec SA	Switzerland	Radu	Vacareanu	TU of Civil Engineering Bucharest	Romania
Thomas	Keller	EPFL	Switzerland	Humberto	Varum	University of Porto	Portugal
Chul-Woo	Kim	Kyoto University	Japan	Mateusz	Wyrzykowski	Empa	Switzerland
Renata	Kotynia	Lodz University of Technology	Poland	Ufuk	Yazgan	Istanbul Technical University	Turkey
Philipp	Krooß	University of Kassel	Germany	Qian-Qian	Yu	Tongji University	China
Eva	Lantsoght	San Francisco de Quito University	Ecuador	Xiao Lin	Zhao	University of South Wales	Australia
Janet	Lees	University of Cambridge	UK				



SMAR 2024

The world of SMAR 2024

Countries of the Corresponding Authors' Institutions

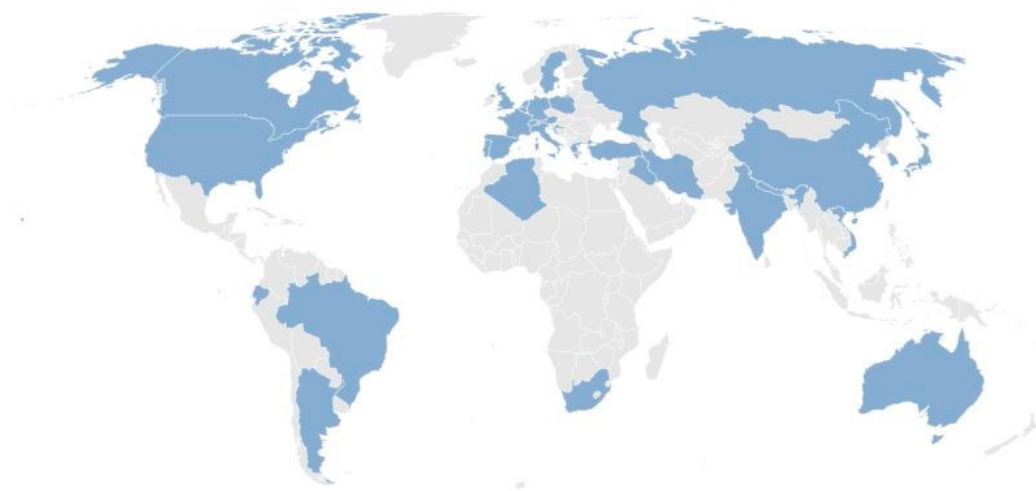


Fig. 1. The World of SMAR 2024

Moreover, seventeen mini-symposia were organized on the following topics:

- MS1: Multifunctional materials for sustainable constructions: integrated thermal, structural, and sensing systems;
- MS2: Research and development of Iron-based Shape Memory alloys and their engineering application technology in China;
- MS3: Digital Manufacturing in Construction;
- MS4: Intelligent digitalization in structural health monitoring and lifetime maintenance of complex structures;
- MS5: Smart FRP and steel structures;
- MS6: Innovative Methods in Strengthening of Concrete Bridges using FRP;
- MS7: Bio-based composites for rehabilitation and retrofitting of buildings and structures;
- MS8: Advances in the investigation of the bond mechanism of externally bonded composites and FRP bars;
- MS9: Advances in Fiber Optical Sensing Solutions for Infrastructure, Geotechnics, and Earth Sciences;
- MS10: Economic assessment and Life-Cycle performance in building and civil engineering works;
- MS11: Seismic-Fire combined assessment and optimization of interventions for buildings and infrastructures;
- MS12: Innovative solutions for fatigue strengthening of existing structures;
- MS13: Natural fibres for eco-compatible solutions in seismic and energy upgrading of masonry structures;
- MS14: Advancements in Risk and Reliability Assessment of Existing Structures;
- MS15: Shape Memory Alloys (SMAs) for Engineering Applications;
- MS16: systems and methods for transport infrastructure surveillance and monitoring;
- MS17: Advancements in Object Digitization and Analysis: A Mini-Symposium on Innovative Tools and Methods.

The scientific quality of SMAR 2024 was also testified by the 6 Keynote Lectures who are recognised scholars working in prestigious academic Institutions or private Companies. Their names and the titles of their speeches are listed below:

- Prof. Fae Azhari (University of Toronto, Canada): *Transcending discreteness in structural monitoring*;
- Prof. Konrad Bergmeister (University of Natural Resources & Life Sciences Vienna, Austria): *AI-enhanced digital inspection of bridges*;
- Dr. Maria Gabriella Castellano (FIP MEC srl, Italy): *Seismic retrofit of buildings in Italy through seismic isolation or energy dissipation*;

Prof. Shirley Dyke (Purdue University, USA): *Empowering engineers by leveraging AI in structural engineering and monitoring*;
 Prof. Urs Meier (Empa, Switzerland): *Advancements in carbon fiber reinforced polymer tendons for structural rehabilitation*;
 Prof. Carlo Pellegrino (University of Padua, Italy): *Management of road bridge networks in Italy by means of integrated SHM systems*.

Taking into consideration both the aforementioned keynote lectures and all the full papers, there is a balanced focus on both "structural health monitoring" and "strengthening of structures". The two best papers presented in each one of these two areas are awarded the Mirko-Roš Medal during the closing ceremony (Fig. 2).



Fig. 2. SMAR Conferences: Mirko-Roš Medal

We wish to express our gratitude to all authors for their contributions, which will serve as valuable references for practitioners, researchers, students, and academics. Special thanks to the members of the International Scientific Committee for their meticulous review of the papers.

We also acknowledge the support of the SMAR 2024 Institutional and Technical sponsors and exhibitors (Fig. 3).



Fig. 3. Institutional and technical sponsors of SMAR 2024

Our appreciation goes to our colleagues on the Organizing Committee, UniSA, Empa, and the conference secretaries Francesco Nigro, Paula Barboza and Ursula Sieber, for their tireless efforts and quick responses to the demands of the conference.

SMAR 2024 Honorary Chairs:

Masoud Motavalli (Empa, Switzerland),
Alper Ilki (ITU, Turkey),

SMAR 2024 Chairs:

Enzo Martinelli (UniSA, Italy),
and Moslem Shahverdi (Empa, Switzerland).