



Orazio Baglieri

Full Professor, PhD

RILEM Senior since 2015



278-CHA : Crack-Healing of Asphalt Pavement Materials

Technical Committee 278-CHA

General Information

Chair: Prof. Hassan BAAJ

Deputy Chair: Prof. Orazio BAGLIERI

Activity starting in: 2016

Cluster F

Deputy Chair

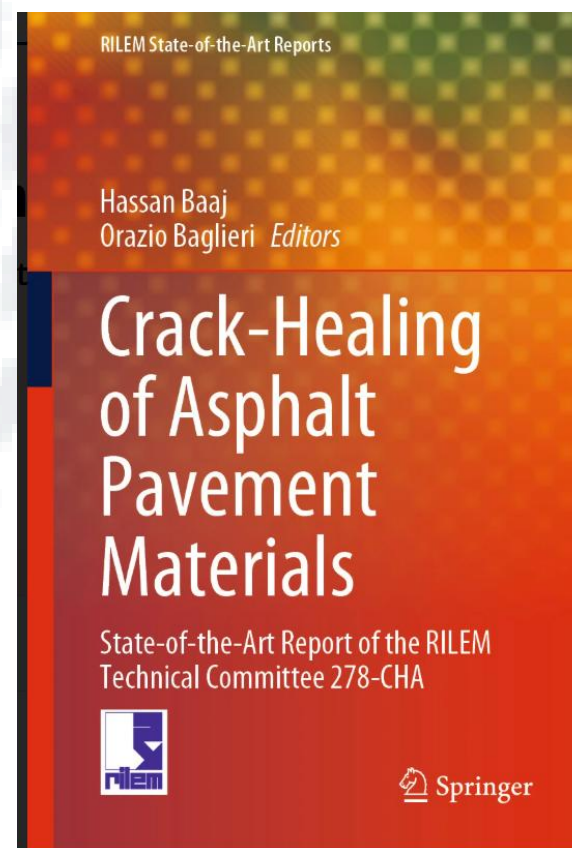
Team Leader TG2 «Experimentation»

> 25 active members

7 Laboratories

TC 323-APD Alternative Pavement Materials – Design and Performance

Member



Materials and Structures (2025) 58:236
<https://doi.org/10.1617/s11527-025-02762-2>

RILEM TC REPORT



Article of RILEM TC 278-CHA: evaluation of self-healing properties of asphalt binders—outcomes and challenges

O. Baglieri · R. Aurilio · F. Miglietta ·
L. Tsantilis · H. Baaj

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Abstract This paper describes part of the activities conducted by RILEM Technical Committee 278-CHA (Crack-Healing of Asphalt Pavement Materials) Task Group 2a. The main objective of the TG2a was to explore and evaluate the experimental methods and criteria for the assessment of self-healing of asphalt binders. The work was developed in two phases. In the first phase, various existing healing test protocols

were scrutinized, encompassing time-sweeps with single rest periods (TS-SRP), time-sweeps with multiple rest periods (TS-MRP), and linear amplitude sweeps with rest periods LASH). The protocols were evaluated and compared across different laboratories. The outcomes of interlaboratory testing led to the selection of the LASH-based approach. However, it was acknowledged that new insights and modifications were necessary due to the possible occurrence of biasing effects during the amplitude sweep. Such issues were addressed in the second phase of research, in which a modified LASH-based procedure underwent further investigation using various methods for data analysis, including approaches based on dissipated energy and the viscoelastic continuum damage model.

Keywords Self-healing · Fatigue damage · Asphalt binder · Dynamic Shear Rheometer · Linear amplitude sweep

This article has been prepared by members of TG2a – Experimentation on Asphalt Binders within RILEM TC 278-CHA. The article has been reviewed and approved by all members of the TC 278-CHA.

TC Membership Chair: prof. Hassan BAAJ.

Deputy Chair: prof. Orazio BAGLIERI.

TC Members: Haia Alifmurtairi, Roberto Aurilio, Hussain U. Bahia, Moises Bueno, Augusto Cannone Falchetto, Jean-Claude Carret, Alan Carter, Eshan V. Dave, Hervé Di Benedetto, Alvaro Garcia Hernandez, Ferhat Hammoun, Bernhard Hofko, Greet Loegwater, Yasmina Mahmoudi, Salvatore Mangiatto, Fabrizio Miglietta, José Norambuena-Contreras, Jorge Carvalho Pais, Christophe Petit, Laurent Porot, Maria Del Carmen Rubio-García, Cédric Sauzet, Amir Tabakovic, Pejoohan Tavassoli, Lucia Tsantilis, Frank Williams, Michael P. Wistuba, Dandi Zhao.

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Lucia Tsantilis
Associate Professor, PhD
RILEM Senior since 2012

TC Member groups:

- 231-NBM : Nanotechnology-based bituminous materials
- 252-CMB : Chemo-Mechanical Characterization of Bituminous Materials
- 272-PIM : Phase and Interphase behaviour of bituminous Materials
- 278-CHA : Crack-Healing of Asphalt Pavement Materials
- 307-PPB : Physicochemical Effects of Polymers in Bitumen





Davide Dalmazzo

Associate Professor, PhD



RILEM Senior since 2019



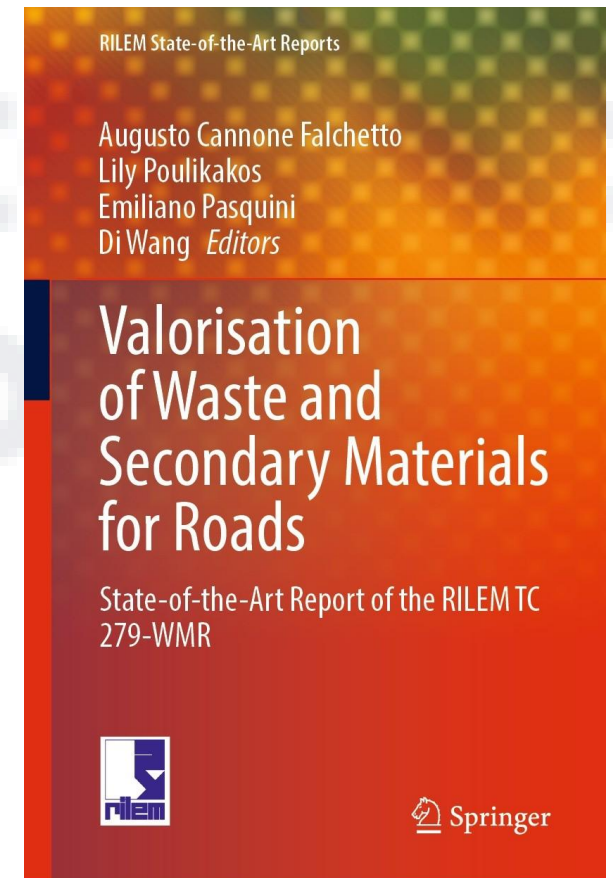
279-WMR : Valorisation of Waste and Secondary Materials for Roads (2017 – 2023)

- RILEM TC 279 WMR round robin study on waste polyethylene modified bituminous binders: advantages and challenges DOI: 10.1080/14680629.2021.2017330
- Bituminous Binder and Bituminous Mixture Modified with Waste Polyethylene DOI: 10.1007/978-3-031-33173-2_2
- RILEM interlaboratory study on the mechanical properties of asphalt mixtures modified with polyethylene waste DOI: 10.1016/j.jclepro.2022.134124

323-APD : Alternative Paving Materials - Design and Performance (2023 – ...)

TG2: Design and performance of paving composites containing APMs

- Characterize (laboratory) physico-chemical and thermomechanical properties of APM with alternative materials: multi-scale approach (bio-binders, recycled plastics, crumb rubber)
- Devise innovative strategies for design, production, and evaluation
- Establish a performance-engineered design framework



Alessandro P. Fantilli

Full Professor of Structural Engineering

RILEM Senior #20329 (since 2015)



Politecnico
di Torino



263-EEC : Environmental evaluation of concrete structures toward sustainable construction

290-IMC : Durability of Inorganic Matrix Composites used for Strengthening of Masonry Constructions

275-HDB : Hygrothermal behaviour and Durability of Bio-aggregate based building materials from 2020 to 2024

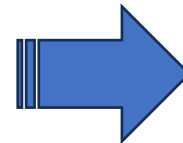
Strain compatibility between HPFRCC and steel reinforcement
A. P. Fantilli, H. Mihashi, P. Vallini
Materials and Structures, 01 May 2005

Evaluation of minimum reinforcement ratio in FRC members and application to tunnel linings
B. Chiaia, A. P. Fantilli, P. Vallini
Materials and Structures, 02 August 2006

Crack profile in RC, R/FRCC and R/HPFRCC members in tension
Alessandro P. Fantilli, Hirozo Mihashi, Paolo Vallini
Materials and Structures, 23 January 2007

Evaluation of crack width in FRC structures and application to tunnel linings
Bernardino Chiaia, Alessandro P. Fantilli, Paolo Vallini
Materials and Structures, 07 May 2008

Optimal content of bio-fibers in structural ice
Alessandro P. Fantilli, Barbara Frigo, Farmehr M. Dehkordi
Materials and Structures, 10 September 2024



Reinforced concrete structures

Fiber-reinforced concrete

High performance concrete

Nonlinear behaviour of concrete structures

Tunnel lining

Sustainability

Concrete with unconventional materials



**International Union of Laboratories and Experts in Construction
Materials, Systems and Structures**

RILEM, presentation of the International Association for Materials and Structures

**Department of Environment, Land and Infrastructure Engineering (DIATI)
October 20th, 2025**

Giuseppe Lacidogna

The slides will provide a brief overview of my involvement with RILEM committees. This includes the international colleagues I have collaborated with, as well as key outcomes such as reports, publications, and other activities.

RILEM Technical Committee Memberships

Member of RILEM Technical Committee 212-ACD “Acoustic emission and related NDE techniques for crack detection and damage evaluation in concrete” (Chairman: Prof. M. Ohtsu) (2004-2010).

23 members from around the world (only one Italian)

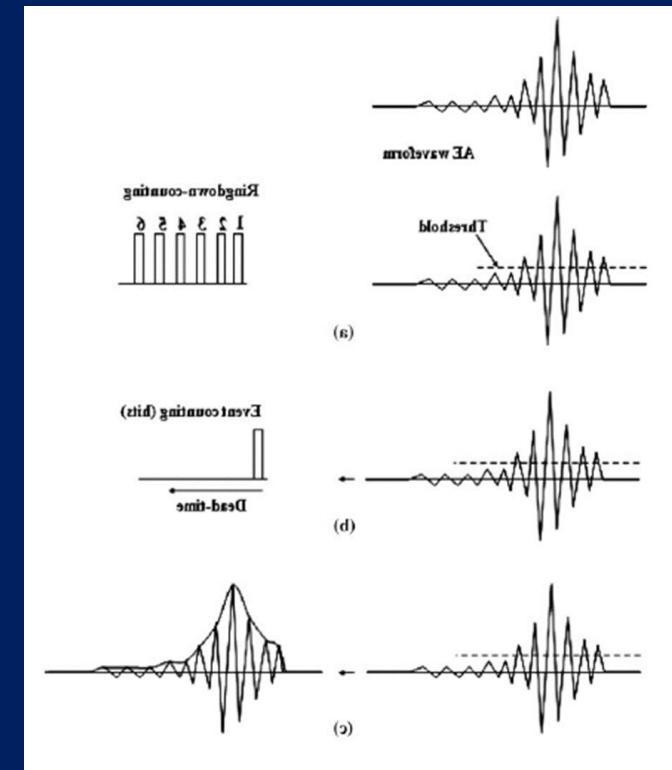
Topic: The need to retrofit aging concrete structures has accelerated the development of NDE techniques like Acoustic Emission (AE) for damage assessment, prompting standardization efforts which is reflected in the RILEM recommendations.

Products: Recommendation of RILEM TC 212-ACD. Acoustic emission and related NDE techniques for crack detection and damage evaluation in concrete.

Measurement method for acoustic emission signals in concrete. *Materials and Structures*, 2010, vol. 43, pp. 1177-1181.

Test method for damage qualification of reinforced concrete beams by acoustic emission. *Materials and Structures*, 2010, vol. 43, pp. 1183-1186.

Test method for classification of active cracks in concrete structures by acoustic emission. *Materials and Structures*, 2010, vol. 43, pp. 1187-1189.



Member of RILEM Technical Committee 239-MCM “On-site measurement of concrete and masonry structures by visualized NDT” (Chairman: Prof. M. Ohtsu) (2010-2016).

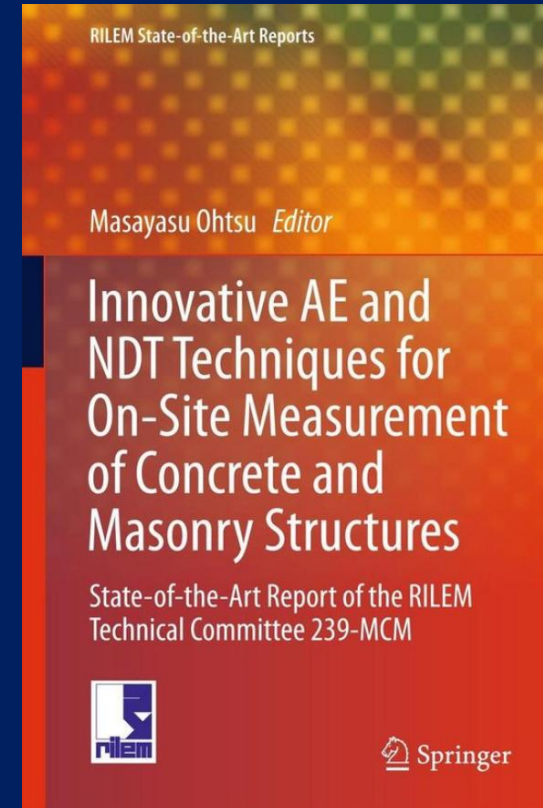
19 members from around the world (only one Italian)

Topic: Due to strong global demand for advanced NDT to inspect aged and cultural heritage structures, the committee aims to develop these techniques, emphasizing user-friendly visualization of results for on-site application.

Products:

Ohtsu, M., and Y. Tomoda. “Acoustic Emission Techniques for Crack Detection and Damage Evaluation”. RILEM Symposium on On Site Assessment of Concrete, Masonry and Timber Structures - SACoMaTiS 2008, edited by L. Binda et al., RILEM Publications SARL, 2008, pp. 191-200.

Ohtsu, M. (Ed.). “Innovative AE and NDT Techniques for On-Site Measurement of Concrete and Masonry Structures: State-of-the-Art Report of the RILEM Technical Committee 239-MCM”. Springer, 2014.



RILEM Technical Committee Memberships

Member of RILEM Technical Committee 269-IAM “Damage assessment in Consideration of Repair/Retrofit-Recovery in Concrete and Masonry Structures by Means of Innovative NDT” (Chairman: Prof. T. Shiotani; Deputy Chair: Prof. Dimitrios Aggelis) (2016-2023).

28 members from around the world (only one Italian)

Topic: A vast number of aging global infrastructures are deteriorating rapidly. To manage these assets sustainably, a shift from reactive to proactive maintenance is crucial, employing advanced repair methods and even self-healing concrete technologies.

Products:

Recommendation of RILEM TC 269-IAM. Damage assessment in consideration of repair/retrofit-recovery in concrete and masonry structures by means of innovative NDT. Methods for damage assessment of concrete members utilizing active elastic wave measurement. *Materials and Structures*, 2025, vol. 58, p. 45

Shiotani, T., Lacidogna G. Aggelis, D.G., et al. (2024) Non-destructive inspection technologies for repair assessment in materials and structures. *Developments in the Built Environment*, 2024, vol. 18, 100443.



RILEM Technical Committee Memberships

Member of new RILEM Technical Committee QPA "Damage evaluation of initial quality and performance of additively manufactured materials by cutting-edge NDT" (Chairman: Prof. T. Shiotani; Deputy Chair: Dr Hwa Kian CHAI) (2024-).

48 members from around the world (only one Italian)

Topic: 3D concrete printing revolutionizes construction by enabling complex designs and reducing waste, but its layered nature demands robust non-destructive testing to ensure long-term structural integrity and quality assurance.

Products: In progress.

Meeting Organization at PoliTO of RILEM Technical Committees

Organizer of the 7th Meeting of RILEM Technical Committee 269-IAM "Damage assessment in Consideration of Repair/ Retrofit-Recovery in Concrete and Masonry Structures by Means of Innovative NDT", Turin, Italy, October 28, 2019.

Organizer of the Closure Meeting of RILEM Technical Committee 269-IAM "Damage assessment in Consideration of Repair/ Retrofit-Recovery in Concrete and Masonry Structures by Means of Innovative NDT", Turin, Italy, December 13, 2023.



Giuseppe Ferrara

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RILEM member since 2020

Main Research Interests

Supplementary cementitious materials
Carbon capture utilization and storage
Sustainable Inorganic matrix-based composites

TC member groups

- **290-IMC** : Durability of Inorganic Matrix Composites used for Strengthening of Masonry Constructions

Chair: Prof. Maria Antonietta AIELLO

Deputy Chair: Dr. Catherine PAPANICOLAOU

Activity starting in: 2019

There are 86 members in this group

- **309-MCP** : Accelerated Mineral Carbonation for the production of construction materials

Chair: Dr Ruben SNELLINGS

Deputy Chair: Prof. Thomas MATSCHEI

Activity starting in: 2022

There are 189 members in this group

Participation to RILEM events

MC3 1st RILEM International Conference on Mineral Carbonation for Cement and Concrete (**April 2024**)

SynerCrete'23 International RILEM conference on synergising expertise towards sustainability and robustness of cement-based materials and concrete structures (**June 2023**)

BEFIB 2021 RILEM-fib X International Symposium on Fibre Reinforced Concrete (**September 2021**)

74th RILEM Annual Week (**August 2020**)

Invited speaker to RILEM webinar

RILEM Youth Council Peer-to-Peer webinar: "Bio-composite in structural applications for new and existing buildings: potential, challenges and perspectives" (**March 2024**)



309-MCP : Accelerated Mineral Carbonation for the production of construction materials

189 members from Universities, Research Institutes and Companies all over the world

- Villagran Yury – VITO (TC MCP)
- Snellings Ruben – KU Leuven (TC MCP)
- Zajac Maciej – Heidelberg Materials (TC MCP / Ca)
- Winnefeld Frank – EMPA (TC MCP)
- Isgor Burkan – U. Oregon (TC MCP)
- Ling Tung-Chai – Hunan U. (TC MCP)
- Matschei Thomas – RWTH Aachen U. (TC MCP / C)
- Garboczi Ed. – NIST (TC MCP)
- Machner Alisa – TU Munich (TC MCP)
- Turcry Philippe – La Rochelle U. (TC MCP)
- Skibsted Jorgen – Aarhus U. (TC MCP)
- Cizer Özlem – KU Leuven (TC MCP)
- Garg Nishant – U. Illinois UC (TC MCP)
- Perumal Priya – U Oulu (TC MCP)
- Srivastava Sumit – RiSE (TC MCP)
- Zhao Zengfeng – Tongji U. (TC MCP)
- Torrenti Jean-Michel – U. Gustave Eiffel (TC MCP)
- Jansen Daniel – Erlangen U. (TC MCP)
- Sant Gaurav – UCLA (TC MCP)
- Myers Rupert – ICL (TC MCP)
-

Current Activities

STAR

- **Test Methods for CO₂ Mineralization in Cement-Based Materials: A Review by RILEM TC 309-MCP**
submitted to Materials & Structures
- **State-of-the-art Report on Carbonation Curing of Shaped-end Construction Products**
to be submitted soon to Materials & Structures

RRT

- **TC MCP WG 4: Test & Evaluation Methods for Carbonated Construction Materials**
Round Robin Test

Participants: *55 research laboratories*

Aim: Definition of testing procedures for the assessment of CO₂ content in products subjected to accelerated mineral carbonation for the production of construction materials.



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