



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

**2021**

Annual  
Report



# About RILEM

**The International Union of Laboratories and Experts in Construction Materials, Systems and Structures** (RILEM, from the name in French – Réunion Internationale des Laboratoires et Experts des Matériaux, systèmes de construction et ouvrages) was founded in June 1947 in Paris, France, with the aim of promoting scientific cooperation and to stimulate new directions for research and applications, thus promoting excellence in construction worldwide.

This mission is achieved through the collaboration of leading experts in construction science and practice, including academics, researchers, industrialists, testing laboratories, and authorities.

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## Become a member

If you are interested in joining RILEM, please consult our website [www.rilem.net](http://www.rilem.net) and become a member.

### Membership benefits include

Participation in RILEM Technical Committees

- Access to the private Web directories restricted to RILEM Members and Online version of the RILEM Directory of Members.
- Personal access after login online to the journal *Materials and Structures*, RILEM Proceedings and Springer/ Nature proceedings
- Reduced fees for RILEM events
- 20% discount on all Springer/Nature e-books
- Opportunity to publish selected articles as free OA paper in *Materials & Structures* and in *RILEM Technical Letters*

### Individual fees in 2022

Young Member	€ 25	Retired Member	€ 75
Senior Member	€ 375		

### Corporate fees in 2022

Institutional Member	€ 2,205	Industrial Member	€ 4,050
Associate Member	€ 1,165		

Note that special discounts of 40% up to 60% on the membership fees apply depending on your country of residence. Please consult the website [membership.rilem.net](http://membership.rilem.net) for all details.

# Editorial

● by RILEM President

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**L**ike many of us in RILEM, I love numbers. I have this habit, that I am sure many of you will understand, of gathering some numbers in a file and draw some figures in order to get an objective and quantitative overview of anything. It makes me feel safe. So, for me, the time of year to assess RILEM activities and get an overall picture of our technical activities feels a bit like Christmas. And this year's annual report comes with many interesting figures.

It has been **2** years since COVID hit us. There have been obviously some more dramatic consequences of the pandemic than the ones on RILEM activities but it is nevertheless the topic of interest here.

Despite the pandemic, in **2021**, RILEM published **4** State-of-the-Art reports while only **1** per year were published in **2019** and **2020**. Although many events had to be turned to online or hybrid, cancelled or postponed in **2021**, **7** RILEM conference proceedings were published. This is in line with the previous five years. When I was chairing RILEM Technical Advisory Committee (TAC) between **2014** and **2018**, I remember that we were dealing with around **35** active Technical Committees (TCs). In **2020**, RILEM had **39** active TCs and **41** in **2021**. The association scientific activity has been therefore growing both in number of active members and active committees, a trend that did not seem to be impacted by the pandemic.

This increase may be seen as consequence of the activity growth in our historical scientific scope on one side, and, on the other side, of the fact that new members and new groups are joining RILEM. This is in line with, and a consequence of, the strategic and scientific direction chosen by RILEM around a decade ago, which was aiming at opening the association to new communities. One of these "new" communities is the one working on earth-based building materials. The TC 274-TCE "[Testing and characterisation of earth-based building materials and elements](#)" started in **2016** and its closure is fast approaching, but more TCs on this subject have been recently approved. Another community that has recently been born in RILEM and that keeps growing extremely fast is the one related to 3D printing technologies. The first TC on this subject was formed in **2016** with TC 276-DFC "[Digital fabrication with cement-based materials](#)". RILEM has now **2** TCs on this subject (PFC "[Performance requirements and testing of fresh printable cement-based materials](#)" and ADC "[Assessment of Additively Manufactured](#)



Nicolas Roussel © Nicolas Roussel

[Concrete Materials and Structures](#)”), with a total of almost **250** TC members. The TAC strategy of welcoming new communities inevitably reflects on the papers published in [Materials and Structures](#), RILEM flagship journal. The scope of *Materials and Structures* has always been defined by the scope of the existing RILEM TCs.

**2021** has been the year of strengthening the presence of RILEM in Latin America. Through the organization of the **75<sup>th</sup>** RILEM Annual Week in Merida, Mexico, the promotion of RILEM activities of the RYC representative for this geographical area, the renewed international partnership with ALCONPAT and AATH, the brand-new partnership with FICEM, and other online events co-sponsored by Lat-RILEM, the number of RILEM members in Latin America have increased from **68** to **108** over the course of **2021**. We now do hope to see these numbers keep on growing in **2022**.

RILEM has experienced a similar trend of increasing number of members from Africa, with **44** members in January **2021** and **74** members in December of the same year. This is, in my opinion, a result of the amazing work done by the RILEM regional convener for Sub-Saharan area and the RYC representative for this geographical region. We understand there are more constraints in this part of the world that go beyond any event or promotional activity. We are working to address such constraints.

Page 25 of this report focuses on our ROC&TOK webinars in **2021**. An average of **250** participants has been recorded attending live each webinar. The viewers of the recorded webinars on [YouTube](#) varies from **400** to more than **2000** per event! These webinars represent a turning point in the role of RILEM in knowledge dissemination. After our books, our journal papers, our recommendations, we now have this ROC&TOK initiative that seems to cover some of the needs for updated information of many of our RILEM members.

The initiative GLOBE was launched in [September 2020](#) and it grew in **2021**, reaching **20** supporting organizations and **111** supporting individuals. By the end of **2021**, we saw the establishment of the Joint Committee on GLOBE Consensus ([JCGC](#)) that will take care of organising specific events and activities in the future. GLOBE is, amongst all RILEM initiatives, the one with the strongest focus on knowledge transfer to society.

Something that I have the feeling has also been changing in the last years is the role of the Presidency of RILEM. RILEM is functioning so well these days! The general secretariat is successfully and efficiently managing the association and new ideas and proposals are being implemented. On this matter, I would like to take the chance to acknowledge our extremely enthusiastic RILEM [officers](#) developing these ideas and proposals. The main role of the Presidency is turning into that of coordinating all these beautiful efforts. With so many brilliant and motivated minds working together to make RILEM a better community, the RILEM Presidency has a role of ensuring that the priority ideas, as defined by our Strategic Road Map, are timely implemented.

We have been cautious with the **2022** RILEM Spring Convention, organising the RILEM workshop online and, at the same time, giving the possibility to have hybrid TCs’ and Standing Committees’ meetings. I am, however, confident that the **2022** RILEM Spring Convention can be seen as the beginning of the end and that the **76<sup>th</sup>** RILEM Annual Week in Kyoto, in September **2022**, will be the beginning of the after COVID, when we will finally meet in person.

**Nicolas Roussel**

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# 2021 Key Numbers

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## Membership



**2,186 members**  
(2,079 individual and 107 corporate)



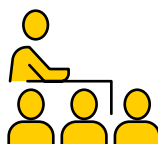
**91 countries**

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## Activities



**41 Technical Committees**



**7 courses**



**33 events**

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## Publications



**4 State-of-the-Art reports**



**7 proceedings**



**9 Recommendations**

# Website



**27,313 viewers**



**182,242 pages views**

## Top 3 countries

-  United States
-  India
-  United Kingdom

# Social Media



**@rilemassociation**

**1,345 followers**  
**+7.86%**

## Top 3 countries Followers

-  India
-  Brazil
-  Mexico



**RILEM Association**

**4,402 followers**  
**+40.5%**

## Top 3 countries Followers

-  France
-  Turkey
-  The Netherlands

## Top 3 countries Visitors

-  India
-  Poland
-  Austria



**RILEM Association**

**2,390 subscribers**  
**+38.39%**

## Top 3 countries Viewers

-  India
-  Japan
-  USA



**@RILEM1947**

**545 subscribers**  
**+71.38%**

# 75<sup>th</sup> RILEM Annual Week and International Conference on Advances in Sustainable Construction Materials and Structures

29 August – 3 September 2021, Merida, Mexico

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## When

From Sunday 29 August 2021  
to Friday 3 September 2021.

## Where

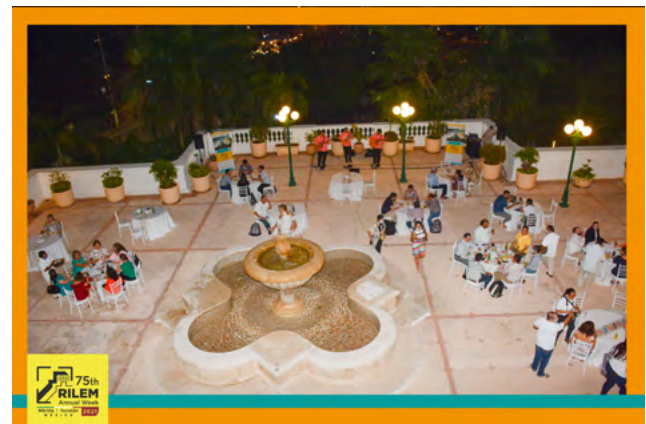
Merida, Yucatan, Mexico.

## Format

Hybrid event (second of this kind in the RILEM history, after the 3<sup>rd</sup> RILEM Spring Convention in Guimaraes, Portugal, in 2020). Some sessions were hybrid, others were fully online. The conference organised eight segments bringing together the latest developments to promote quality assurance in construction materials and testing.



Opening session ©Pedro Castro Borges.



Welcome cocktail at Fiesta Americana ©Pedro Castro Borges.

## Organizing Committee Chairpersons:

Pedro Castro-Borges, Centro de Investigación y de Estudios Avanzados (CINVESTAV Unidad Mérida), México.  
Alejandro Durán-Herrera, Universidad Autónoma de Nuevo León (UANL), México.

## Scientific Committee Chairperson:

José Iván Escalante-García, Centro de Investigación y de Estudios Avanzados (CINVESTAV Unidad Saltillo), México.



José Iván Escalante-García, Pedro Castro-Borges, Ravindra Gettu, Alejandro Durán-Herrera  
©Pedro Castro Borges.





### Some numbers of the conference

Around 230 abstracts written by 770 authors from 31 countries; 13 plenary sessions and 16 parallel sessions. Around 60 conference delegates attended in person from Colombia, Nicaragua, France, USA, Argentina, México and Brazil. COVID incidents during the event: ZERO!

### Doctoral courses

Prior to the conference, [five doctoral](#) courses were offered 100 % on-line on topics such as microstructure, corrosion, alkaline activated materials, UHPC, and durability. The courses were given by RILEM members who are experts in the subjects with an attendance between 30 and 82 students from different world. The courses also included parts of the a poster competition in which each of the seven winners received a complimentary registration to attend the 76<sup>th</sup> RILEM Annual Week in Kyoto.



### Poster award

At the 75<sup>th</sup> Annual RILEM Week, the RILEM [Best Student Poster Award](#) went to Dr Michelle Tiong, College of Civil Engineering, Hunan University, Changsha, China, for her poster titled

©Pedro Castro Borges.

“Acceleration carbonation of dry-mix pressed cement blocks: a coupling effect of water-to-cement and moulding pressure”, co-authored by Xuemiao Li and Tung-Chai Ling. Michelle received a certificate and a 500 EURO prize issued by RILEM. Congratulations Michelle!

Six more students attending the RILEM PhD courses held before the 75<sup>th</sup> Annual Week received, in recognition of the quality of their posters, a piece of art designed by Mexican artist Guidofarina. You can see the full list of winners [here](#). Congratulations to these students!

### Special gift

A special gift for the RILEM 75<sup>th</sup> Anniversary was presented by the organizers to 2019-2021 RILEM President Prof. Ravindra Gettu and RILEM Honorary Member Prof. Surendra Shah: an original creation by [Guidofarina](#) celebrating and honouring the 75 years of RILEM.

The masterpiece will be displayed at RILEM headquarters in Paris.



The artist Guidofarina explaining the symbolic in his drawing to RILEM President Ravindra Gettu ©Pedro Castro Borges.



Pedro Castro Borges, Guidofarina and Ravindra Gettu ©Pedro Castro Borges.



Original creation by Guidofarina celebrating and honouring the 75 years of RILEM ©Pedro Castro Borges.

### PhD grant

RILEM awarded three travel grants to PhD students less than 35 and coming from the countries where [discounted RILEM fees](#) apply. The awardees were:

- Ms. Anusha Basavaraj, Indian Institute of Technology Madras, Chennai, India
- Ms. Dyana Joseline, Indian Institute of Technology Madras, Chennai, India
- Mr. Lautaro Santillan, Universidad Nacional de la Plata, La Plata, Argentina.

Congratulations to these students!

Due to Covid restrictions, Anusha and Dyana could not travel to Mexico to attend the 75<sup>th</sup> RILEM Annual Week, but they will use the grant to travel to the next onsite RILEM event. Lautaro, instead, managed to attend the conference in person.



Breakfast with RILEM President and the students present at the conference ©Pedro Castro Borges.

### 2021 medallists

The 2021 RILEM medallists presented their work during the plenary sessions of the conference:

- “Chloride binding – investigations and knowledge gaps”, Klaartje de Weerd, University of Science and Technology, Norway, 2021 Robert L’Hermite Medallist.
- “Predicting the lifetime of infrastructure susceptible to hydrogen embrittlement and corrosion damage”, Emilio Martínez-Pañeda, Imperial College, UK, 2021 Gustavo Colonnetti Medallist.
- “Supplementary cementitious materials reactivity: From model systems to concrete”, Prannoy Suraneni, University of Miami, USA, 2021 Gustavo Colonnetti Medallist.

The recordings of these presentations are available on the [RILEM YouTube channel](#).



Prof. Surendra P. Shah, USA  
©Pedro Castro Borges.

### TC presentations during the conference plenary sessions

- TC 276-DFC “Digital fabrication with cement-based materials”, Nicolas Roussel, Université Gustave Eiffel, France.
- TC 274-TCE “Testing and characterisation of earth-based building materials and elements”, Antonin Fabbri, Entpe, France.
- TC 270-CIM “Benchmarking Chloride Ingress Models on Real-life Case Studies: Theory and Practice”, Eddie Koenders, Technical University Darmstadt, Germany.
- TC 271-ASC: “Accelerated laboratory test for the assessment of the durability of materials with respect to salt crystallization”, Barbara Lubelli, TU Delft, The Netherlands.
- TC 272-PIM “Phase and Interphase behaviour of bituminous material”, Emmanuel Chailleux, Université Gustave Eiffel, France.

The recordings of these presentations are available on the [RILEM YouTube channel](#).

### Other plenary lectures

- Integrating reinforcement in digital fabrication with concrete”, Viktor Mechtcherine, Institute of Construction Materials, TU Dresden, Germany.
- “Challenges in the implementation of performance-based design, quality assurance and best construction practices – the case of Mexico”, Sergio

All the PhD students attending the conference received the RILEM 75<sup>th</sup> Anniversary book signed by the RILEM President and the organizers ©Pedro Castro Borges.



Alcocer, Instituto de Ingeniería-UNAM, México.

- “Novel upcycling technique of recycling of cement paste powder by a two-step carbonation process”, Chi Sun Poon, The Hong Kong Polytechnic University, Hong Kong.
- “Exciting new insights into competitive adsorption”, Robert J Flatt, Institute of Building Materials, ETH Zürich, Switzerland.
- “An Introduction to ACI” and “Sustainability with Graphene based composites”, Surendra P Shah, Northwestern University, USA.
- “Globe Consensus”, Wolfram Schmidt, BAM, Germany, also available [on YouTube](#).

### RILEM organization updates

- [2022-2025 RILEM Presidency](#): Nele De Belie: RILEM Vice-President; Nicolas Roussel: RILEM President; Ravindra Gettu: RILEM Outgoing President.
- 2022 RILEM Honorary President: Prof. Takafumi Noguchi, University of Tokyo, Japan.
- New TAC chair: Dr Enrico Sassoni, University of Bologna, Italy.
- New Cluster D convener: Dr Anya Vollpracht, RWTH, Germany.
- New Cluster E convener: Prof. Arun Menon, IIT Madras, India.

### RILEM Publications

At the conference, the following RILEM publications were officially launched:

- The RILEM [75<sup>th</sup> Anniversary book](#), that highlights the major changes of the association in the last two decades, presented during the event by Prof. Mark Alexander.
- The [2020-2021 RILEM Technical Report](#), containing the details of the activities of the RILEM Technical Committees over the last 12 months.
- The conference Proceedings containing only some selected papers will be published soon by Springer.

### Technical day

The last day of the conference was dedicated to the site visit of the deep port in Progreso, Yucatán, an event that was organized for the joint celebration of the 75<sup>th</sup> anniversary of RILEM, the 80<sup>th</sup> anniversary of the old Progreso pier, that is a 6.5 km long stainless steel reinforced structure in the Gulf of Mexico, and the 150 years of the founding of the city of Progreso.



RILEM publications success with the students ©Pedro Castro Borges.



Technical day at Progreso ©Pedro Castro Borges.



Technical day at Progreso ©Pedro Castro Borges.



RILEM dinner at Hacienda Temozon ©Pedro Castro Borges.



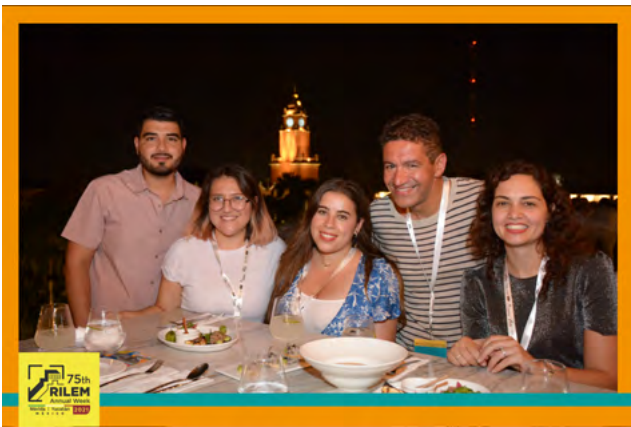
RILEM dinner at Hacienda Temozon, La Vaqueria, Yucatan traditional dance ©Pedro Castro Borges.



RILEM dinner at Hacienda Temozon ©Pedro Castro Borges.



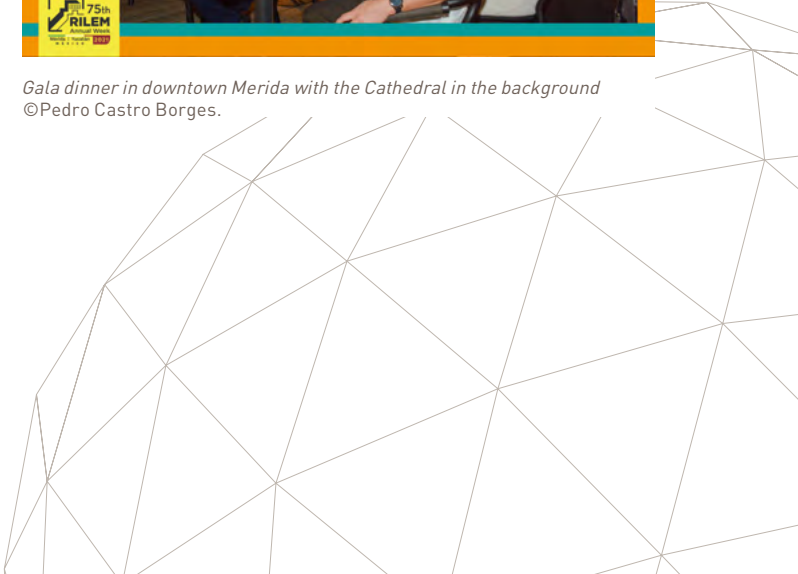
Gala dinner in downtown Merida, transport of the delegates in horse carriages to Plaza Grande ©Pedro Castro Borges.



Gala dinner in downtown Merida ©Pedro Castro Borges.



Gala dinner in downtown Merida with the Cathedral in the background ©Pedro Castro Borges.





RILEM's Honorary President reception ©Pedro Castro Borges.



RILEM's Honorary President reception ©Pedro Castro Borges.



An amazing team of volunteers that helped to run smoothly this whole week, thanks to them! ©Pedro Castro Borges.



# RILEM 75<sup>th</sup> Anniversary Book

This is the third book published about the history of the association since its foundation: the first one marked the 30<sup>th</sup> anniversary, the second the 50<sup>th</sup> anniversary and this one, the [75<sup>th</sup> anniversary](#). This booklet highlights the major changes of the association in the last two decades with a special emphasis on the members' personal reflections and anecdotes. It also presents some interesting conclusions about the importance, in the future of RILEM, of digitalization processes, automation, impact on human health, carbon-neutral construction, and circular economy. The latter ones are already hot RILEM topics rooted in the recent initiative [GLOBE](#).



# 2021 RILEM Workshop conclusions and actions

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The 2021 RILEM Strategy Workshop was held to discuss and decide the future and pathway of the association.

The themes of the parallel sessions of the 2021 Strategic workshop were:

1. Young members
2. Industry
3. Dissemination
4. Online digital tools
5. Rilem values
6. DAC-Presidency list of items

About 80 members actively discussed these topics over a 3-hour online meeting. The summaries of their discussion were presented to the RILEM Presidents and the wider community of RILEM members. Some of the initiatives that were proposed have been already implemented or are in the “under construction” phase. Some details are reported in the following paragraphs.

## Young members

- The RYC is implementing the “peers-to-peers” webinar series. Please stay tuned as this initiative is scheduled to start in 2022.
- Through the RILEM social media channels and newsletter, RILEM is advertising job vacancies, like post-doc positions, assistant professorships, or junior researcher/engineer positions, available at the firms and organisations that are RILEM corporate members.
- RILEM is working on further developments of the current scheme called “RILEM PhD travel grant”, offering financial support to PhD students from certain countries to attend in person a RILEM event.

## Industry

DAC will propose some measures to incorporate more industry feedback and involvement in the RILEM activities.

## Dissemination

EAC is working on a virtual library that will become live hopefully in 2022.

## Online digital tools

TAC has created a task group to support storage of data created by the RILEM Technical Committees. The aim is to provide protocols for storage of data and metadata. The task group will suggest platforms where data can be stored and foresee templates for metadata information. The creation of an ontology or dictionary will help to select uniform keywords that should make data findable. Scripts may be created to transform data to a machine readable format to ensure long term accessibility of data.

## RILEM Values

A recurrent question through all the parallel sessions of the Strategy workshop was: how does RILEM more pro-actively contribute towards environmental/health challenges? RILEM has shown its commitment towards a greener built environment by supporting GLOBE. A recent press release has been published in Dec 2021. Further actions on this matter will be presented in 2022.

# RILEM Membership

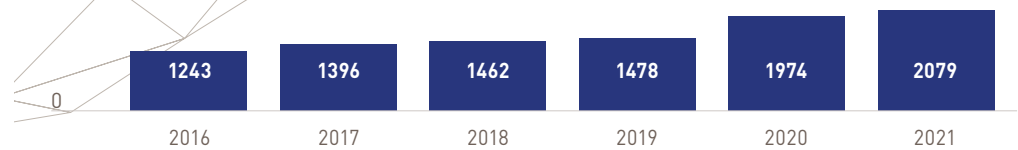
## RILEM individual members

RILEM Individual Members are:

- Senior members: Experienced scientists or engineers over the age of 35.
- Young members: Master and PhD students, and young research scientists or engineers up to the age of 35.
- Retired members.
- Honorary members: Individuals who have rendered exceptional services to the association.

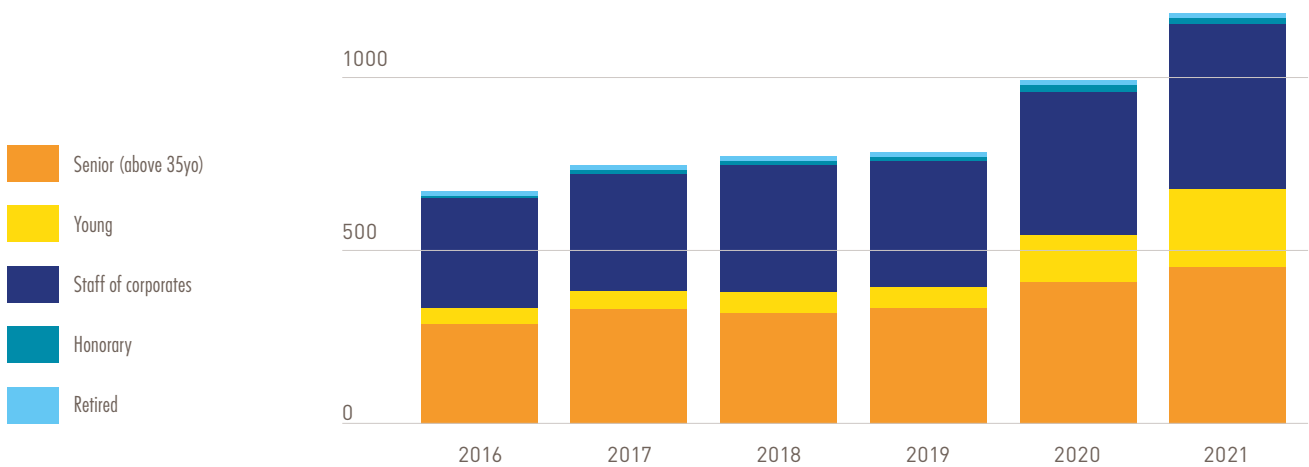
In 2021, the number of individual RILEM members continued to increase, following the trend of the last 5 years, from 1,243 members in 2016 to 2,079 members in 2021.

**RILEM INDIVIDUAL MEMBERS**  
(does not include free members)



Previous tendencies are confirmed, with Senior and Staff Corporate Member categories representing almost 80% of the total individual membership.

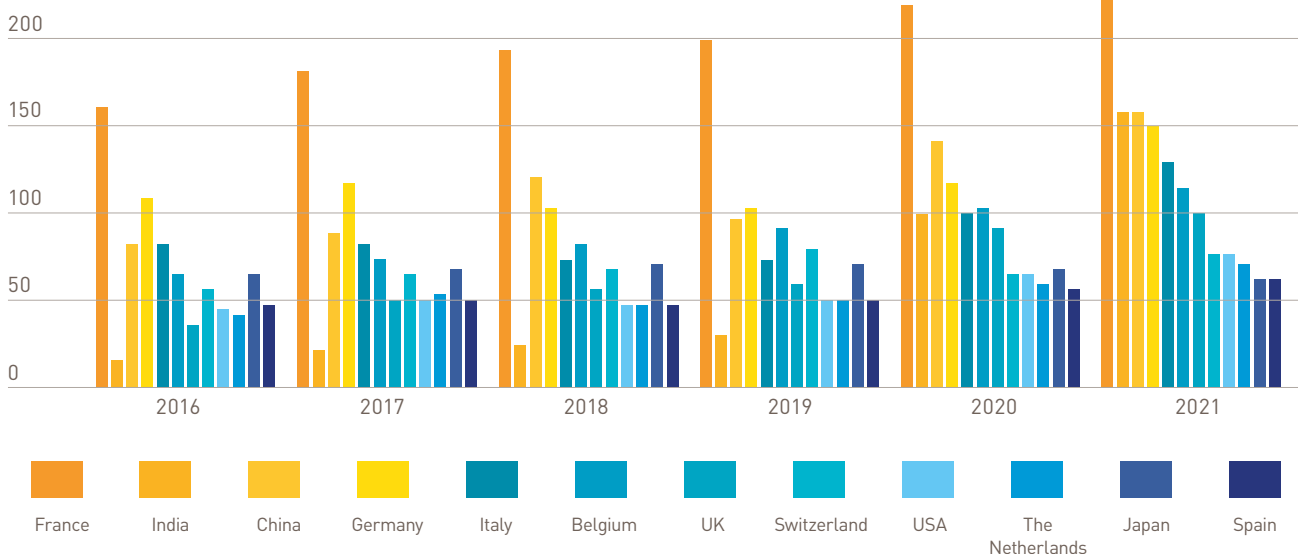
## RILEM members by membership categories (does not include free members)



## Countries most represented within RILEM members

In 2021, France continued to be the country with the highest number of RILEM members (231), followed by the same group of countries as in previous years, showing a large dissemination of RILEM in China, Germany, Italy and Belgium. It is interesting to note that for the second consecutive year, India has made a significant leap, increasing from 30 members in 2019 to 100 in 2020 and 159 in 2021. This sharp increase can be attributed to the important work of the South Asia Regional Convener, Dr Radhakrishna G. Pillai, as well as the RILEM Youth Council South Asia representative, Dr Surender Singh.

Countries most represented within RILEM members

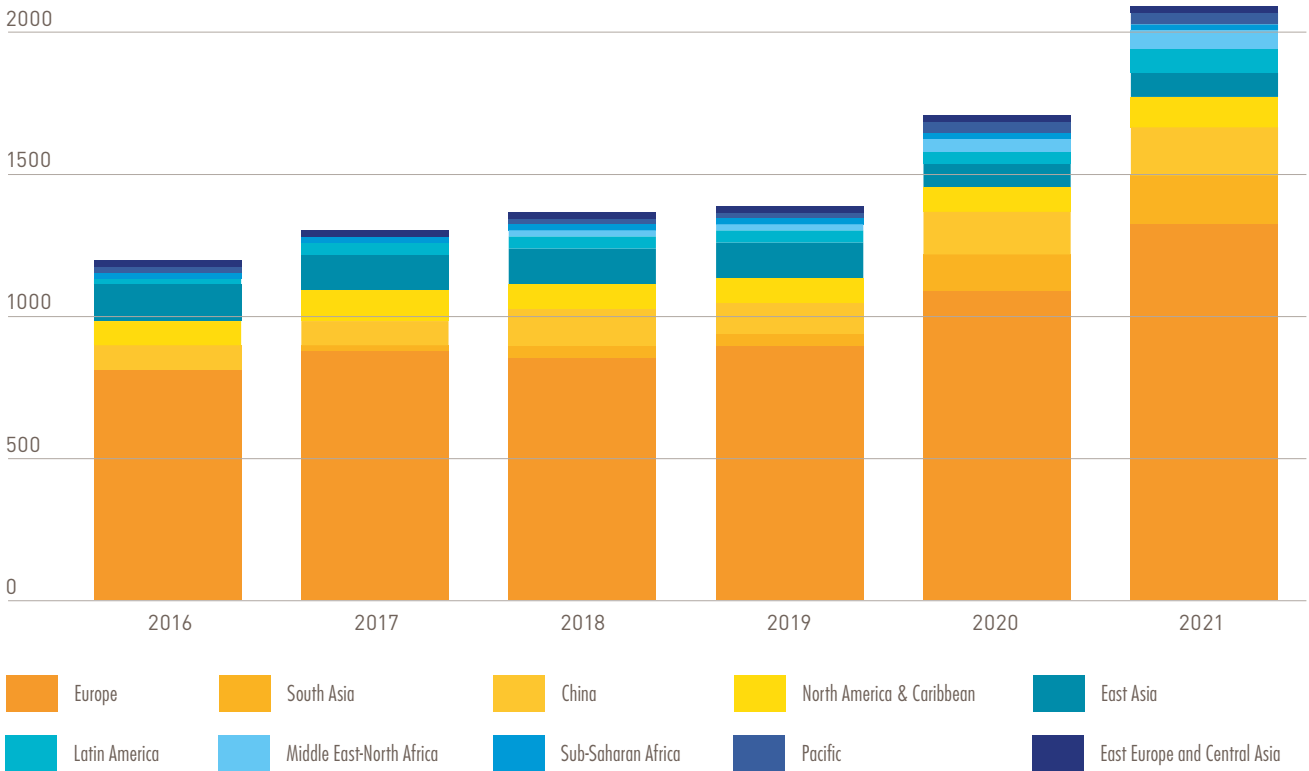


## RILEM members dissemination per region

Amongst the 10 geographical areas that RILEM established some years ago, Europe keeps the highest number of members (1,311). In 2021, Europe's membership grew by more than 200 members for the second consecutive year. South Asia has ranked at second position with 180 members, mainly due to the growth in India, as explained in the previous section. China reached the third position (160) and is followed by North America (116) and East Asia (81). The increase in Latin America is significant (77) and will certainly continue, thanks to the organization of last RILEM Annual Week in Merida, Mexico. In 2021, all regions have attracted new members, thanks to the activities of many RILEM members and officers and the promotional activities of the RILEM Youth Council members and the RILEM Implementation Manager.

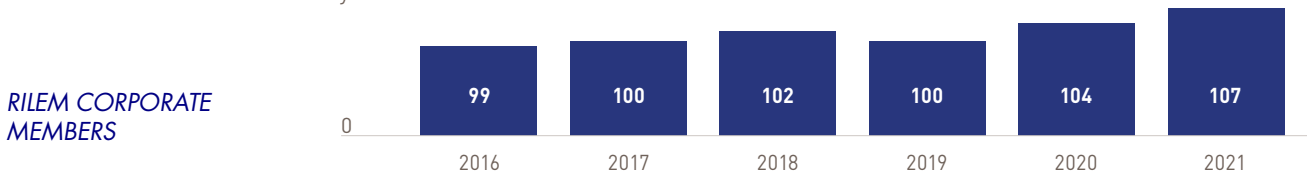


### Countries most represented within RILEM members



### Corporate members

The number of Corporate Members has been relatively stable, with a slight overall increase in recent years.



### Gender Balance

For the past 4 years, the gender balance has slowly changed in favour of a larger number of female members, representing 28% of the total membership in 2021. This is in line with the current trend in companies with similar activities, i.e. civil engineering and construction.

	Men	Women
2018	79%	21%
2019	73%	27%
2020	76%	24%
2021	72%	28%

# RILEM Youth Council

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In 2020, the RILEM Youth Council (RYC) was created to attract more RILEM young members and to increase active participation of young members in RILEM activities. This Sub-committee of DAC is composed of young members (many of which are PhD students), 10 nominated by the Regional conveners and one nominated by the DAC Chair. Their mandates last for 3 or 4 years. The RYC Chair and Vice-Chair are invited to attend DAC and TAC meetings.

The main tasks of the RYC are related to:

- Attracting, involving, and motivating young RILEM members.
- Encouraging the participation of young members in TAC and EAC activities.
- Increasing awareness on RILEM events and courses.
- Preparing young members for leadership positions in the organization.
- Showcasing / celebrating the achievements of the RILEM Youth.
- Creating networks between emerging researchers to increase visibility of / access to RILEM.

The RILEM Youth Council began its mandate in February 2021 by first defining an action plan with goals that would be quantified using the SMART (Specific-Measurable-Assignable-Realistic-Time bound) criteria. It subsequently started an email campaign to attract new young RILEM members. Emails were sent to current senior RILEM members asking them to forward an invitation to their PhD students to join RILEM. The campaign was more successful in some regions than in others and so alternative forms of invitations that are region specific are currently being discussed.

During the RILEM Spring Strategic Workshop held in April, the special sessions on young members were facilitated by members of the RILEM youth council and youth community. The workshop discussions generated many great ideas for initiatives to increase the participation of young and emerging researchers in the activities of RILEM. Following the Spring convention, the RYC social media committee established a RILEM Youth Instagram account where they have been regularly sharing relevant RILEM information with Instagram users.

At least one RYC member has been assigned to each of the RILEM standing committees namely the DAC, EAC and TAC to coordinate different activities. The RYC members have given presentations on the RILEM youth community

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Why become a member?

- Promote sustainable and safe construction
- New directions of research
- Advance leading-edge technology through dedicated committee work
- Reduced fees on events and Springer eBooks

Visit the RILEM website and find out more

**Question 3: What is the best part about being in the RILEM youth community?**

*“For me the best part lies in having a group of friendly people that are in the early stages of their careers in research, so they are perfect for sharing work struggles and talking about future plans in academia, as well as scientific topics.”*

**Magda Posani**

**Question 3: What is the best part about being in the RILEM youth community?**

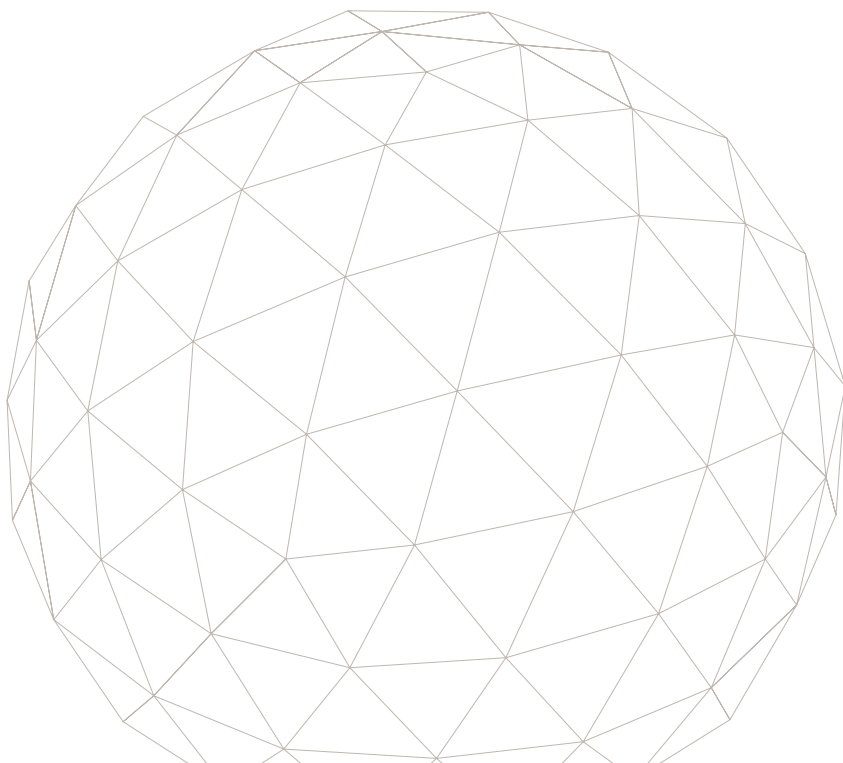
*“As RILEM Youth members, we are the next generation of researchers, leading efforts to repair and restore urban infrastructure, and create low-carbon new infrastructure in developing areas.”*

**David Orense**

Some of the Instagram posts by RILEM Youth © RYC.

at various events including but not limited to The virtual conference on “Materials and value chains for sustainable, inclusive, and resilient urbanisation in Africa” (held online) and “Concrete 2021”.

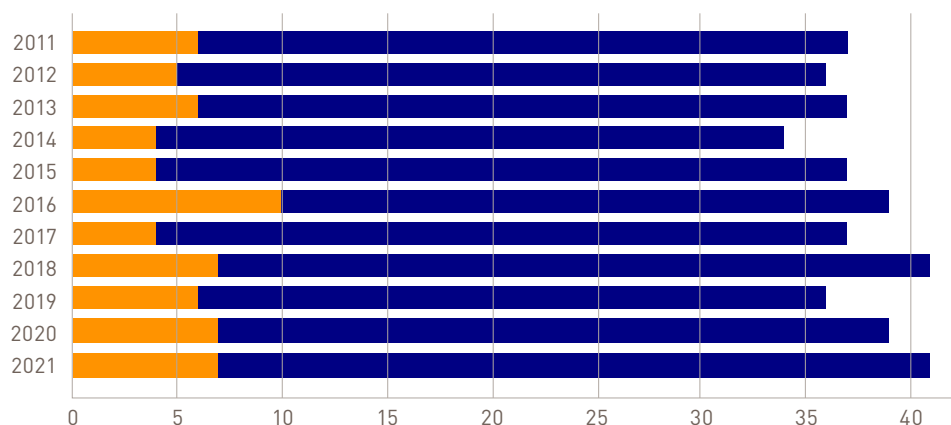
The RYC has been conducting monthly meetings where its members discuss the progress made on their goals and actions, any challenges they are experiencing and plans for future activities. They conducted a mid-year review of their 2021 goals in June 2021 which they presented to the DAC. The RYC has ended off 2021 by drafting a proposal for peer-to-peer webinars (an idea suggested during the Spring Strategic workshop) that will be implemented in the spring of 2022.



# Technical Committees

Within RILEM, Technical Committees are the heart of the organisation, and the backbone of action. They are highly dynamic and have a limited functioning life of five to seven years. Every year, several technical committees are closed after successfully reaching their goals, and new TCs are initiated. During the last decade, the number of active Technical Committees fluctuated around 35, and in 2021 this number reached 41 active committees.

## Technical Committees



Every year, five to seven new technical committees are created. The full list of active TCs and details about their work can be consulted at [tc.rilem.net](http://tc.rilem.net)

### The following seven new committees were approved in 2021:

**Cluster A.** Material Processing and Characterization  
(Convener: Daman Panesar)

**ADC: Assessment of additively manufactured concrete materials and structures**, chaired by Viktor Mechtcherine

**CNC: Carbon-based nanomaterials for multifunctional cementitious matrices**, chaired by Florece Sanchez

**PCC: Pumping of concrete**, chaired by Dimitri Feys

**PFC: Performance requirements and testing of fresh printable cement-based materials**, chaired by Nicolas Roussel

**Cluster E.** Masonry, Timber and Cultural Heritage  
(Convener: Arun Menon)

**TPT : Tests methods for a reliable characterization of resistance, stiffness and deformation properties of timber joints**, chaired by Jorge Branco

**Cluster F.** Bituminous Materials and Polymers  
(Convener: Eshan Dave)

**FEE : Fume emissions evaluation for asphalt materials**, chaired by Johan Blom

**PPB : Physicochemical effects of polymers in bitumen**, chaired by Hinrich Grothe



**We closed five Technical Committees in 2021 and these TCs have successfully terminated their mission by publishing recommendations and/or STARs:**

**TC 260-RSC** Recommendations for use of superabsorbent polymers in concrete construction, chaired by Viktor Mechtcherine  
*Several Recommendations published in 2018 & 2019*

**TC 262-SCI** Characteristics of the steel/concrete interface and their effect on initiation of chloride-induced reinforcement corrosion, chaired by Ueli Angst  
*Recommendation to be published in 2022*

**TC 264-RAP** Asphalt Pavement Recycling, chaired by Gabriele Tebaldi  
*STAR and recommendations to be published in 2022*

**TC 270-CIM** Benchmarking Chloride Ingress Models on Real-life Case Studies: Theory and Practice, chaired by Eddie Koenders  
*STAR to be published in 2022*

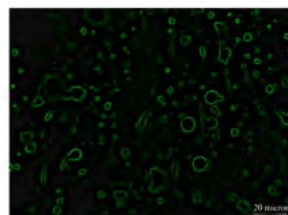
**TC 276-DFC** Digital fabrication with cement-based materials, chaired by Nicolas Roussel  
*STAR to be published in 2022*



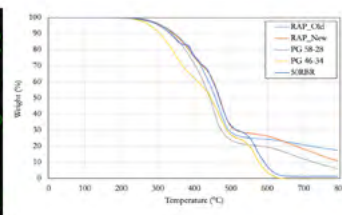
*Infrared Spectrometer for Bitumen Analysis in RILEM TC 295-FBB, Task Group 1 ©Dr Johannes Mirwald*



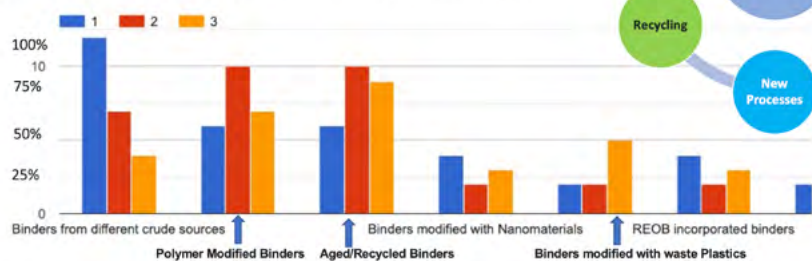
*Testing reactivity of MgO-based additives ©Hua Li, TC 286-CEC*



*a) UV Fluorescence microscopy polymers in bitumen*

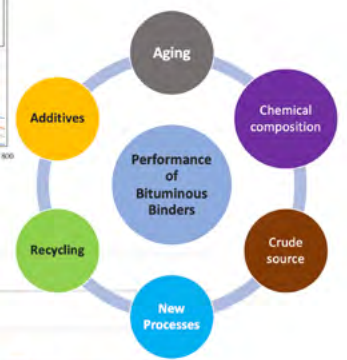


*b) TGA of recycled binders*



*c) Priorities of top three materials for fingerprinting of bituminous binders*

*Concept of RILEM TC 295-FBB, Task Group 2 ©Dr Pejooan Tavassoti-Kheiry*

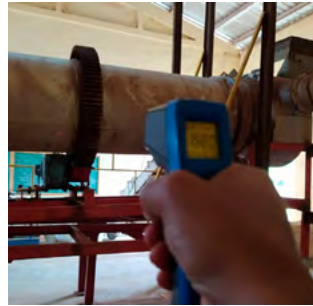




On-site application of lime-based mortars ©Laboratory of Building Materials, AUTH



On-site measurements of workability ©Maria Sarantidou, architect



Calcination temperature ©TC282-CCL



LC3-TRC LATAM working at the Industrial Trial ©TC282-CCL



Industrial Trial ©TC282-CCL



Channel with joints repaired ©TC282-CCL



Industrial Trial ©TC282-CCL



Rotary Kiln ©TC282-CCL



Mixing of raw materials ©TC282-CCL



Filling of the joints between water channels covered with concrete slabs ©TC282-CCL



Moistening the joints ©TC282-CCL



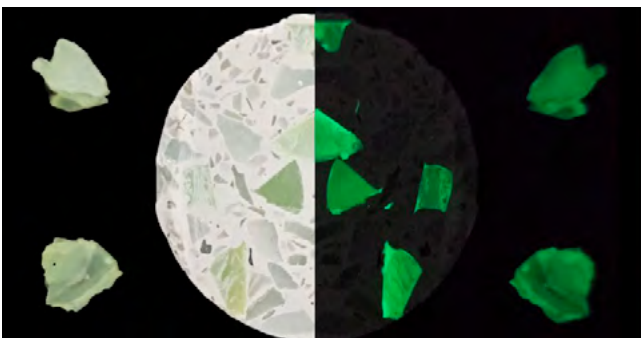
Placing the mortar in the channel joints ©TC282-CCL



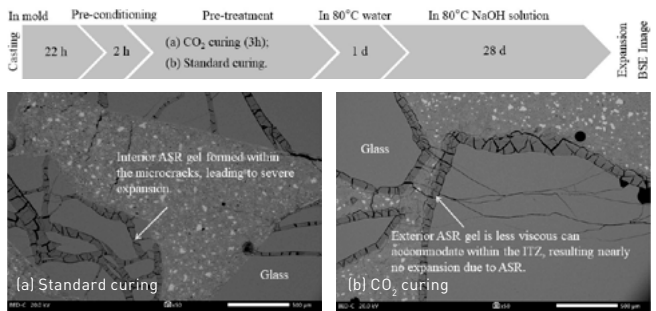
Samples for compressive strength and capillary absorption tests ©TC282-CCL



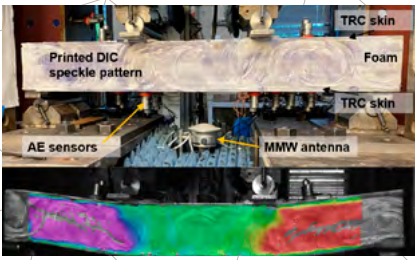
Taking the temperature of the calcination ©TC282-CCL



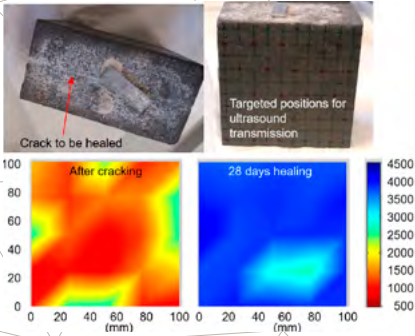
The architectural luminescent glass mortar in the daytime (left) and nighttime (right) ©TC (Bill) Ling, Hunan University



Distribution of 28 days glass-induced ASR gels in [a] standard cured mortar bar and [b] mortar bar pretreated with CO<sub>2</sub> ©Tung-Chai (Bill) Ling, Hunan University



Behnding of a cementitious composite sandwich panel monitored by Digital Image Correlation (DIC), Ultrasound and Acoustic Emission (AE). At the bottom the shear strain field as depicted by DIC. This study is related to the activity of Rilem TC 269-IAM ©MEMC-VUB

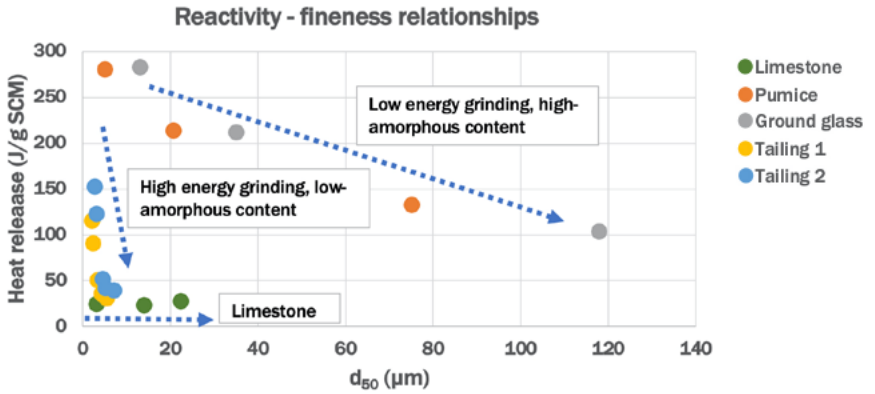


Self-healing of a cracked mortar specimen containing Superabsorbent Polymers (SAPs). The ultrasonic scans reveal the healing throughout the whole cross-section. Related to Rilem TC 269-IAM ©MEMC-VUB

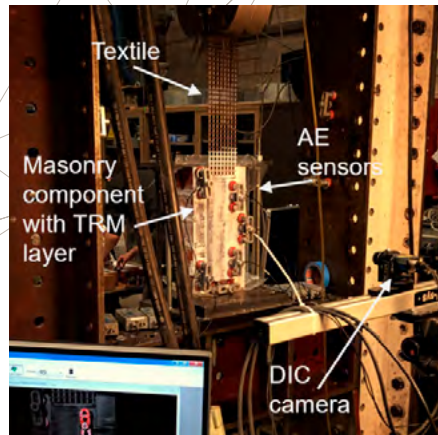
The fracture progress on TRM strengthening layers on masonry substrate tested in dynamic fatigue mode is monitored by an integrated non-destructive methodology: Digital Image Correlation tracks TRM cracking, textile slippage and debonding, but also the interface delamination. Ultrasound assesses the integrity of the repair solution and Acoustic Emission monitors the damage onset and define the dominant fracture sources. This work is related to the working activity of RILEM committees TC 269-IAM and 290-IMC ©MEMC-VUB



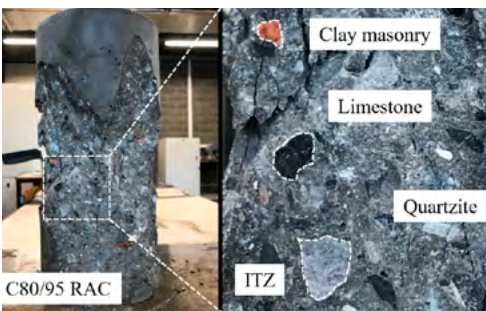
Damage evolution of a Tuffeau specimen upon contamination with 5% sodium sulfate, following the experimental procedure under development by the Technical Committee 271-ASC ©Davide Gulotta, Getty Conservation Institute



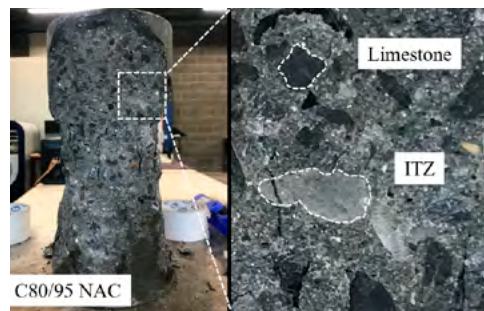
Complex influences of amorphous content and grinding method on the fineness-reactivity relationships for different calcium aluminosilicates are illustrated ©Prannoy Suraneni, University of Miami



Measurement of the expansion deformations using an electronic indicator mounted on a tripod: a) zeroing the indicator on the reference rod, b) measurement of sample deformations ©V.R. Falikman, TC 286-CEC



Failure patterns of NAC and RAC after compression ©Xiaoguang Chen KU Leuven



Type A+ RCA in Belgium ©Xiaoguang Chen KU Leuven



S4 concrete with 100% Type A+ RCA ©Xiaoguang Chen KU Leuven



C80-95 concrete with 100% Type A+ RCA ©Xiaoguang Chen KU Leuven



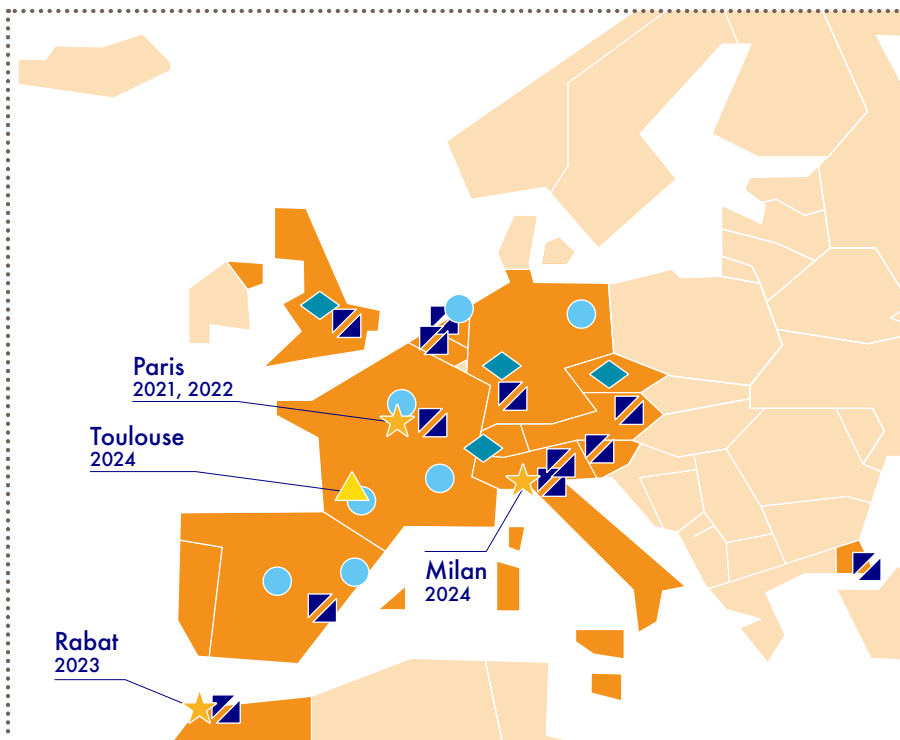
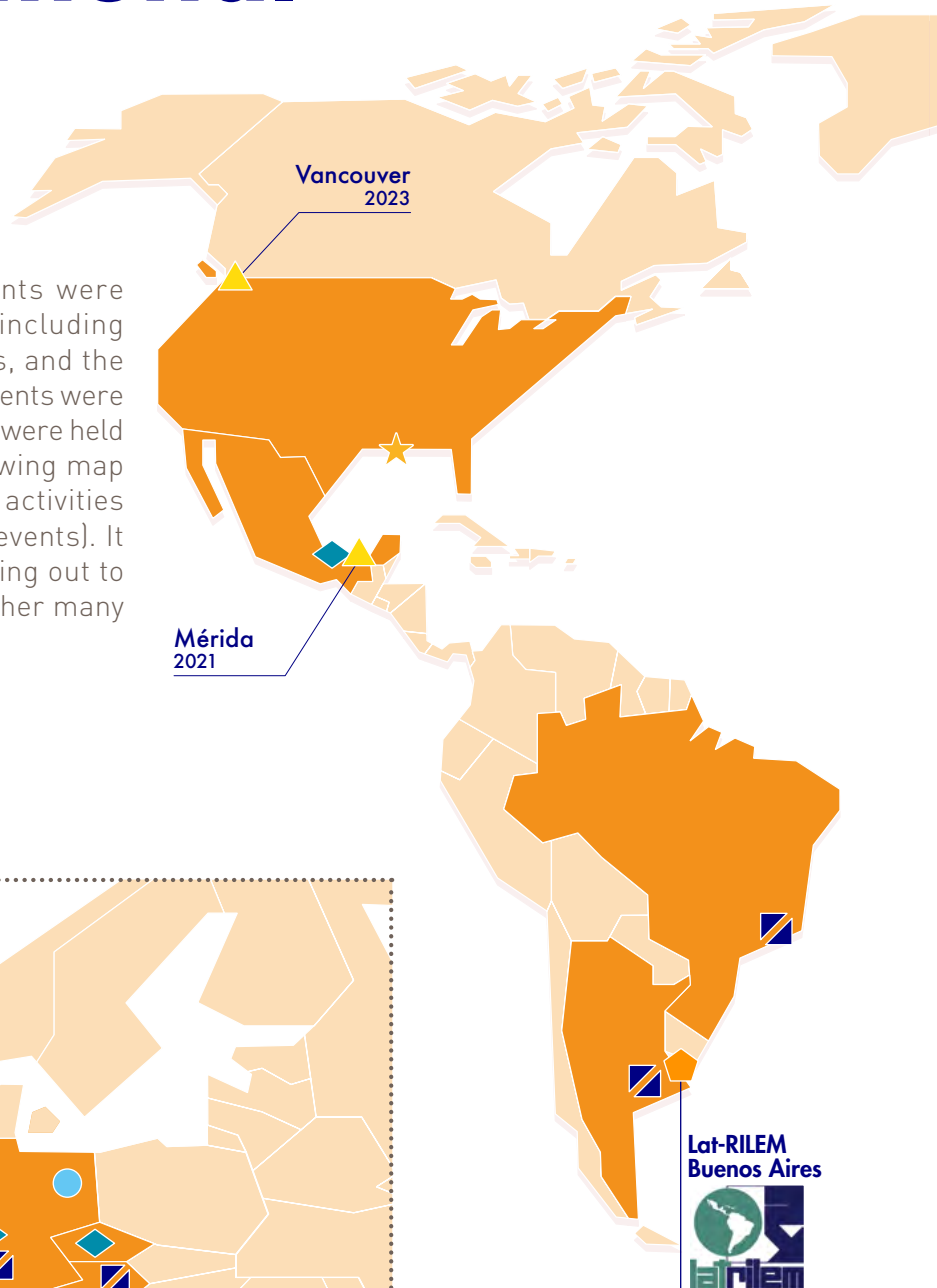
Salt-frost scaling of concrete with 30% Type A+ RCA ©Xiaoguang Chen KU Leuven



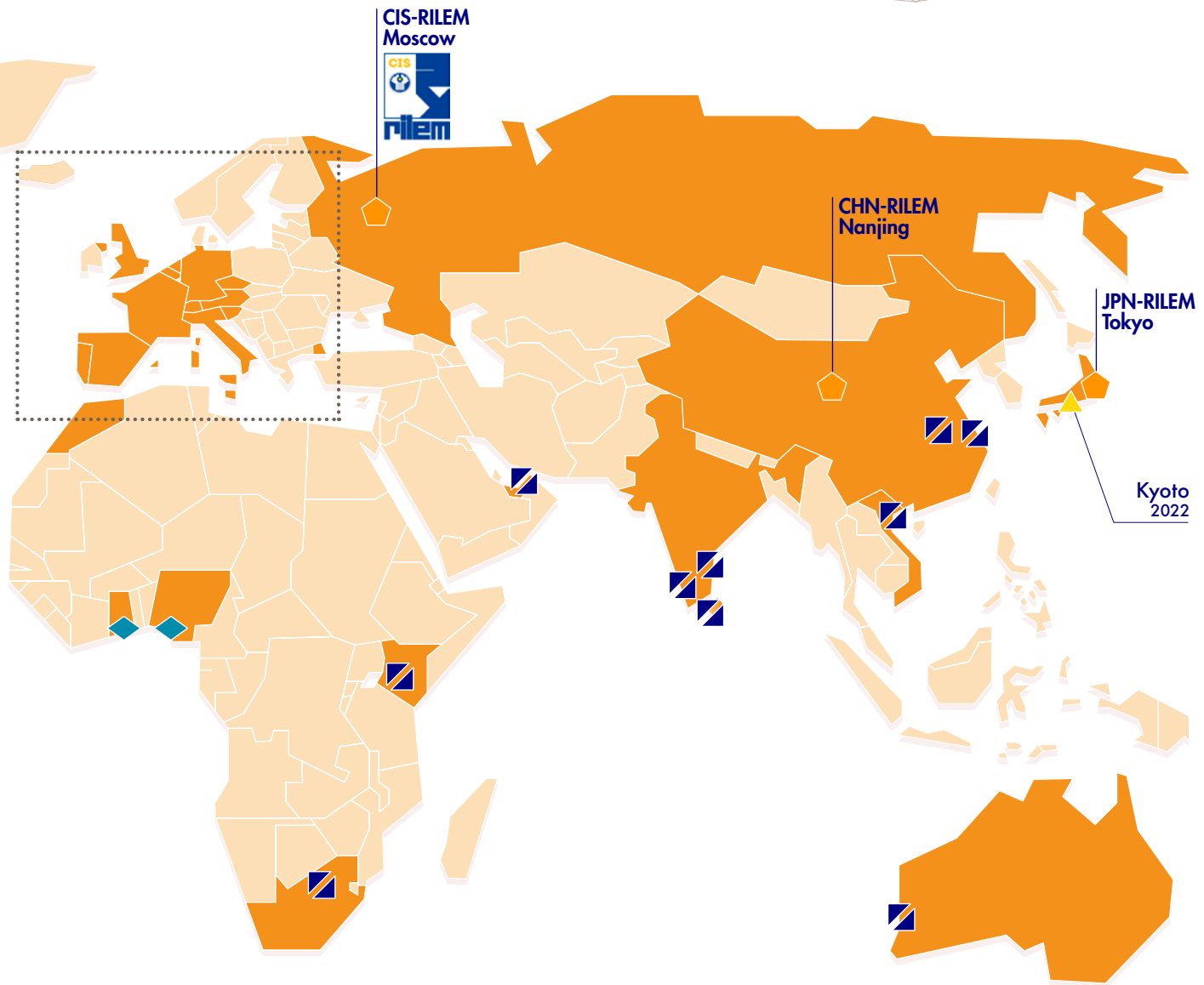
Salt-frost scaling of concrete with 100% Type A+ RCA ©Xiaoguang Chen KU Leuven

# Technical and Educational Events

Many technical and educational events were again organized worldwide in 2021, including conferences, workshops, PhD courses, and the like. Due to the COVID-19, some of the events were postponed and a few cancelled but many were held online or in a hybrid format. The following map shows the geographical spread of the activities (based on the original location of the events). It can be concluded that RILEM is reaching out to all corners of the world bringing together many people!

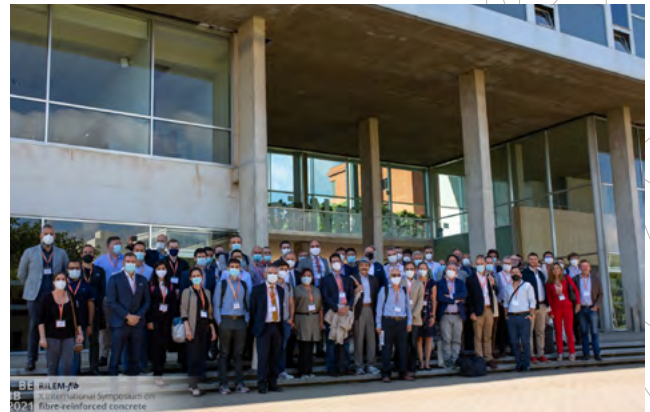




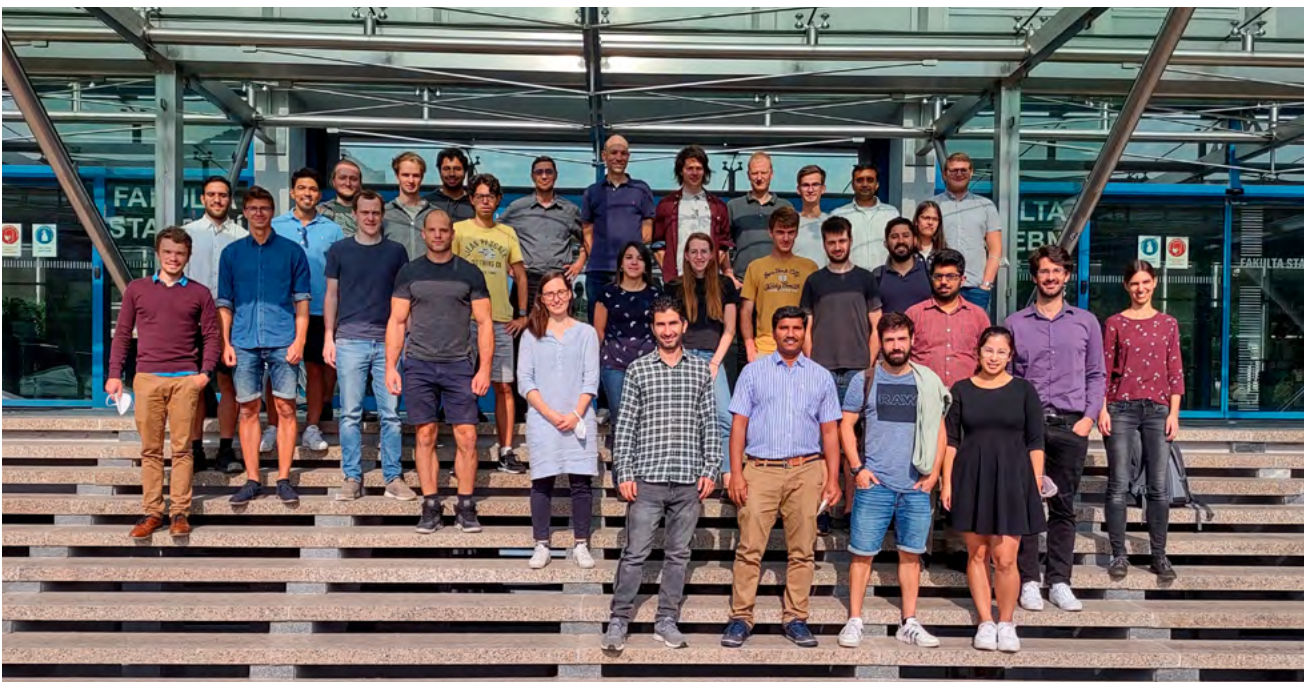


## RILEM Events 2021

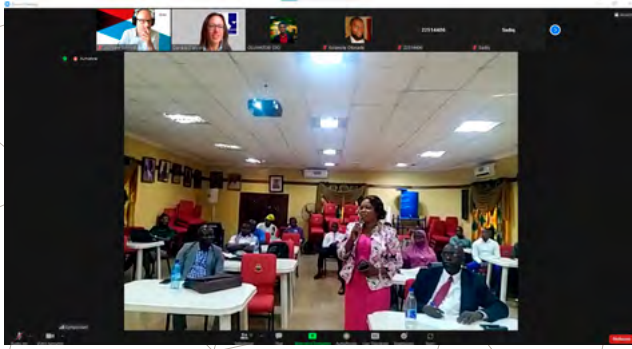
-  Co-sponsored event
-  Educational activity
-  RILEM event
-  Regional/National Group
-  Spring Convention
-  RILEM Annual Week



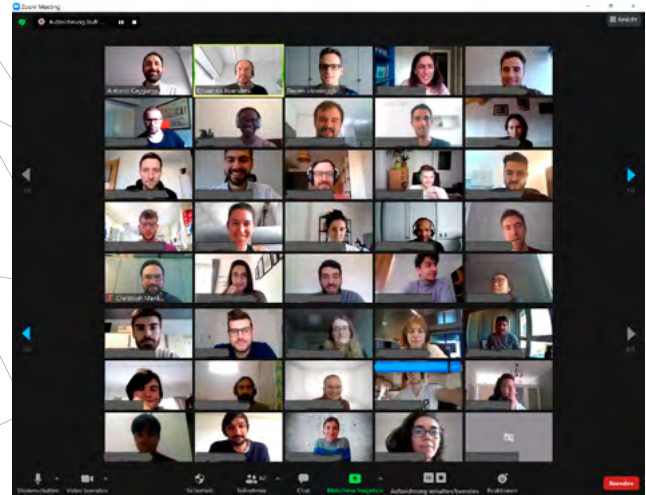
RILEM-fib X International Symposium on Fibre Reinforced Concrete – BEFIB 2021, 20-22 September 2021, Valencia Spain © BEFIB 2021



Advanced course on Modeling of Localized Inelastic Deformation course, 6-10 September 2021, Prague, Czech Republic ©Milan Jirasek



1<sup>st</sup> Graduate Symposium on Sustainable Concrete and Structures, 28-30 October 2021, Nigeria ©Kolawole Olonade



Computational Methods for Building Physics and Construction Materials course on Zoom, 12-16 April 2021 ©Eddie Koenders

## Educational Activities

The main activity of the EAC this year has been the ROK&TOK webinars. Since their launch in November 2020, the ROK&TOK webinars have attracted more than 3,000 attendees from 85 different countries covering topics such as CO<sub>2</sub> emissions, thermodynamic modelling, hydration and performance of limestone calcined clay cement, corrosion and electrochemistry of steel in concrete, rheo-physics, alkali-silica reaction, digital concrete, and microcracks in concrete. The final webinar was a special presentation by Dr Franco Zunino, winner of the 2020 Nanocem PhD Prize. Attendees of these webinars can acquire CPD credits from the Institute of Concrete Technology thanks to its partnership with RILEM.

Hosted by EAC member Dr Pan Feng, the first non-English webinar Research Progress and Prospects of Carbonate Cementitious Materials, was presented by Prof. Caijun Shi from Hunan University, China to an audience of more than 700 attendees.

### ROC&TOK Webinars in 2021

Title	Date	Speaker (s)
The technological breakthrough of Limestone Calcined Clay Cement (LC3)	02/12/2021	Franco Zunino
Microcracks in concrete : their characteristics and impact on durability	04/11/2021	Hong S. Wong
Research Progress and Prospects of Carbonate Cementitious Materials	28/10/2021	Caijun Shi
Recycling of Asphalt Pavements	07/10/2021	Eshan V. Dave, Gabriele Tebaldi
Digital concrete : Dream or reality? New green or ecological monster?	01/07/2021	Robert Flatt
Alkali-Silica Reaction: Research Needs & the Link to Practice Description	03/06/2021	Jason Ideker
Rheo-physics and shaping of fresh cement-based materials	06/05/2021	Nicolas Roussel
Corrosion and electrochemistry of steel in concrete	01/04/2021	Ueli Angst
Hydration and performance of Limestone Calcined Clay Cement	04/03/2021	Shashank Bishnoi, Fernando Martirena
Thermodynamic modelling: a tool to understand hydrated cements	04/02/2021	Barbara Lothenbach

The pandemic continues to affect the organization of the PhD course series as many were postponed or moved online. The doctoral course series *Computational Methods for Building Physics and Construction Materials* taught by Prof. Eddie Koenders, Dr Neven Ukrainczyk, Dr Christophe Mankel and Dr Antonio Caggiano attracted **118** online registered participants (excluding the teachers). The RILEM-Neville Centre-Institute of Concrete Technology specialised short course on Multi-scale Cracking of Concrete Materials drew **114** delegates; many of them were professional engineers.

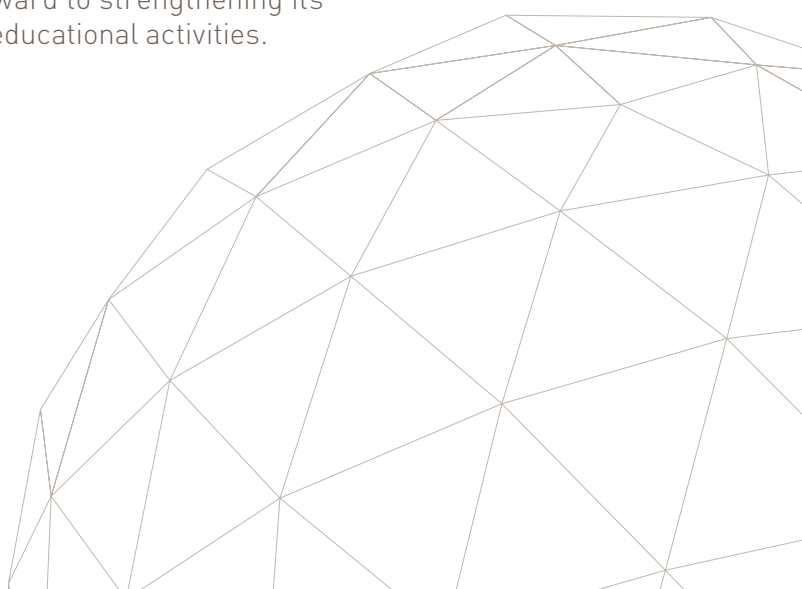
The traditional series of PhD courses before the RILEM Annual Week was moved online for the event in Mérida, Mexico this year. More than **200** delegates registered to the PhD Courses.

On-site courses included the course series Advanced course on Modeling of Localized Inelastic Deformation in Prague.

RILEM has continued to support courses in Africa with two on-site co-sponsored events in Nigeria and Ghana under the initiative of former EAC member, Dr Wolfram Schmidt.

<b>EAC Courses in 2021</b>			
<b>NAME</b>	<b>DATE</b>	<b>LOCATION</b>	<b>CONTACT NAME</b>
Computational Methods for Building Physics and Construction Materials - ONLINE	12/04/2021	ONLINE	Eddie Koenders
PhD Courses series - Mérida RILEM Annual Week	16/08/2021	ONLINE	Alejandro Duran-Herrera
Advanced course on Modeling of Localized Inelastic Deformation	06/09/2021	Prague, Czech Republic	Milan Jirasek
Aspects of Materials, Architecture, Structures and Gender Equity in Sustainable	22/09/2021	Accra, Ghana	Wolfram Schmidt
1st Graduate Symposium on Sustainable Concrete and in Nigeria	28/10/2021	Abeokuta, Nigeria	Kolawole Olonade
RILEM-Neville Structures Centre-Institute of Concrete Technology specialised short course : Multi-scale Cracking of Concrete Materials	10/11/2021	ONLINE	John Forth
7 <sup>th</sup> LC3-Doctoral School	25/11/2021	Lausanne, Switzerland	Karen Scrivener

Finally, EAC was happy to invite RILEM Youth Council members David Orense (North America) and Magda Posani (Europe) during the Spring Convention and RILEM Annual Week meetings and looks forward to strengthening its collaboration with this new committee regarding educational activities.





# Publications

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Of utmost importance for RILEM is the dissemination of information. This is facilitated through different channels such as the flagship publication of RILEM, the journal *Materials and Structures*, the Open Access journal *RILEM Technical Letters*, conference proceedings, STAR reports, technical reports, and RILEM Recommendations.

## ***Materials and Structures***

In 2021 *Materials and Structures*, the flagship journal of RILEM, has continued to champion publication of high quality research focussing on RILEM's key themes: Material Processing and Characterization, Transport and Deterioration Mechanisms, Structural Performance and Design, Service Life and Environmental Impact Assessment, Masonry, Timber and Cultural Heritage, and Bituminous Materials and Polymers. 2021 marked changes in the Associate Editorial board, as we bid farewell and thank you to Prof. Climent Molins and Prof. Pietro Lura. We would like to formally thank you both for your service in many diverse subject fields. The longstanding commitment, dedication and high quality service of Prof. Pietro Lura as our past-Editor-in-Chief is particularly greatly appreciated.

The editorial team have all worked hard to keep up the high publication standards set in previous years, despite continued difficult global circumstances. Due to the dedicated service of the Associate Editors, of more than 240 voluntary reviewers, and of the whole editorial team publication times have improved across 2021 despite the continued impact of COVID-19 pandemic. Articles appear online in their final form on average twenty days after acceptance, and the average time from submission to first decision is 28 days. Currently (November 2021), no pending papers are older than fourteen months.

This year marked RILEM's 75<sup>th</sup> anniversary, and *Materials and Structures* will celebrate this milestone the publication of a commemorative issue. This will highlight some of the most influential papers published in the journal, via introductory pieces authored by a range of RILEM members. These highlighted papers are keystones to the current work being completed by RILEM technical committees, and will be published in the coming issues of *Materials and Structures*. Look out for publication of these highlight pieces in the journal in December and January; we hope you enjoy them.

## Published articles and impact of the journal

Submission numbers observed across 2021 are slightly increased from the past two years. From January to December 2021 the total number of submissions was over 1600, reaching our highest ever annual number of submissions. The number of published papers is expected to continue to increase slightly in coming years, as we seek and implement strategic opportunities to grow the number of high-quality submissions we receive and publish, aligned with the RILEM vision to use *Materials and Structures* as a venue to highlight the best work of the organisation and its members. 229 papers have been published in volume 54 (2021). The acceptance rate for papers submitted in 2020 was approximately 14%, a slight increase from the rate observed in 2019 and a reflection of the very high standards of quality that we set for *Materials and Structures* as a leading journal.

The impact factor (IF) for 2021 has increased to 3.428, showing the predicted recovery from several years of fluctuation. Currently, the journal ranks 17/63 in Construction & Building Technology, 29/512 in Civil and Structural Engineering, 36/517 in Mechanics of Materials and 75/638 in Materials Science. Our journal remains a highly-cited and very well regarded outlet for important work in fields related to the core scope of RILEM.

## Platform for dissemination of the RILEM TCs work

As in previous years, *Materials and Structures* served as an important platform for the dissemination of the outcomes of RILEM Technical Committees. So far in 2021, five RILEM TC reports (three from TC 265-TDK, and one each from TC 260-RSC and TC 277-LHS) have been published, together with nine RILEM Recommendations (six from TC 258-AAA, and one each from TC 265-TDK, TC 287-CCS, and TC 261-CCF). We anticipate growth in this area during 2022, as there are already a number of excellent TC publications in the pipeline, and we encourage all TC chairs and members to target *Materials and Structures* as a primary venue in which your important work can and should be published.

To facilitate the dissemination of TCs' work, this year we have introduced Topical Collections within *Materials and Structures*; these allow the grouping of the outputs from a TC in one place independent of their publication date. In 2021 we have published two topical collections: [TC 258-AAA Recommendations for Avoiding Alkali Aggregate Reactions in Concrete – Performance Based Concept](#), and [TC 265-TDK Development and assessment of a RILEM Recommendation: Testing methods for determination of the double-K criterion for crack propagation in concrete](#).

## Outstanding Papers and Best Reviewer awards

As in previous years, the Editorial Board and the RILEM Presidency awarded the authors of the most scientifically interesting and most innovative papers with the Outstanding Paper Award for the best papers published in 2021. Another important RILEM Award related to the journal is the Best Reviewer Award, granted annually by the Editorial Board to our best volunteer reviewers in 2021, who guarantee the high scientific quality of the published articles via a timely and rigorous review process.



## List of Outstanding Papers 2021

Behaviour of an interface between pavement layers obtained using Digital Image Correlation,  
T. Attia, H. Di Benedetto, C. Sauzéat & S. Pouget

- Temperature dependence of viscoelastic Poisson's ratio of cement mortar,  
A. Baranikumar, Christa E. Torrence & Zachary Grasley
- Steel fibers for replacing minimum reinforcement in beams under torsion,  
Luca Facconi, Fausto Minelli, Paola Ceresa & Giovanni Plizzari
- Hardened properties and durability of large-scale 3D printed cement-based materials,  
Yu Zhang, Yunsheng Zhang, Lin Yang, Guojian Liu, Yidong Chen, Shiwei Yu & Hongjian Du
- A multi-level investigation on the mechanical response of TRM-strengthened masonry,  
Ali Dalalbashi, Bahman Ghiassi & Daniel V. Oliveira
- Torsion-shear behaviour at the interfaces of rigid interlocking blocks in masonry assemblages: experimental investigation and analytical approaches,  
Claudia Casapulla, Elham Mousavian, Luca Argiento, Carla Ceraldi, Katalin Bagi
- Influence of fiber alignment on pseudoductility and microcracking in a cementitious carbon fiber composite material,  
D. Volkmer, Matthias Rutzen, Philipp Lauff, Roland Niedermeier, Oliver Fischer, Manuel Raith, Christian U. Grosse, Ursula Weiss & Malte A. Peter
- Triaxial mechanical behaviour of hybrid basalt polypropylene fibre-reinforced concrete: The effect of micro-fibres at multi scale levels,  
Qiang Fu, Mengxin Bu, Li Su, Lei Liu, Lou Chen, Ning Li & Ditao Niu
- RILEM TC 277-LHS report: a review on the mechanisms of setting and hardening of lime-based binding systems,  
J. I. Alvarez, R. Veiga, S. Martínez-Ramírez, M. Secco, P. Faria, P. N. Maravelaki, M. Ramesh, I. Papayianni & J. Válek
- Recommendation of RILEM TC 258-AAA: RILEM AAR-0 Outline Guide to the Use of RILEM Methods in the Assessment of the Alkali-Reactivity Potential of Concrete,  
Terje F. Rønning, Børge Johannes Wigum, Jan Lindgård, Philip Nixon & Ian Sims

NB: This is the first article in the "RILEM TC 258-AAA: Recommendations for Avoiding Alkali Aggregate Reactions in Concrete – Performance Based Concept" topical collection.

## Materials and Structures Best Reviewers 2021

- **Stefan Jacobsen**, Norwegian University of Science and Technology, Norway
- **Hiroshi Sasano**, Arup Japan, Japan
- **Piyush Chaunsali**, Indian Institute of Technology Madras, India
- **Johannes Mirwald**, Institute of Transportation, TU Wien, Austria
- **Miomir Miljkovi**, University of Niš, Serbia
- **Qiang Zeng**, Zhejiang University, China
- **Go Igarashi**, The University of Tokyo Graduate School of Engineering, Japan
- **Wenqiang Zuo**, Université Gustave Eiffel, France

## RILEM Technical Letters

The year 2021 has been the sixth year since the creation of RILEM Technical Letters in 2016. With its [sixth volume](#), the journal has continued to gain impact in the construction and building materials community.

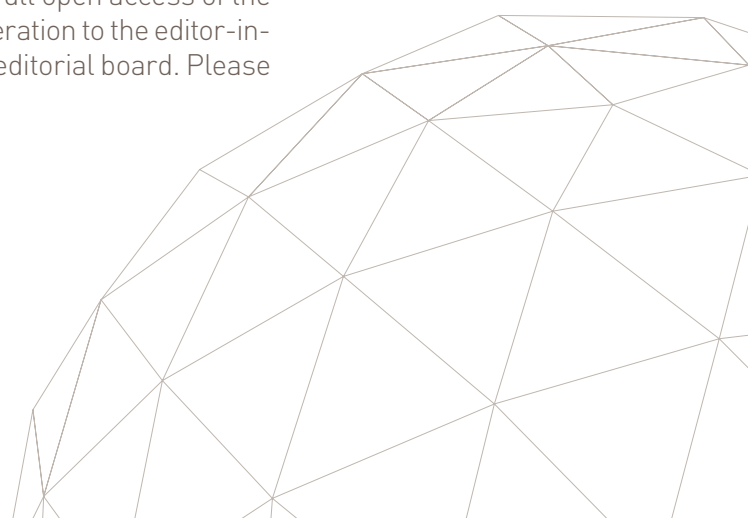
Thanks to the efforts of the team of dedicated editors, the invited articles cover the whole spectrum of RILEM's interests, in particular supplementary cementitious materials, asphalt, durability and the most recent modelling studies. One emerging topic that gains interest among researchers and practitioners is the reduced footprint of the construction sector – our journal also becomes prominent in this area with new papers on life cycle assessment, recycling of asphalt and concrete and carbon sinks.

The published articles are still in the form of concise letters, with a focus on the most ground-breaking recent findings or overviews of the current trends in the field. One particular direction started in 2020, that will be continued in the following years, will focus on research trends and global challenges at the regional scale. In the coming volumes this will be further enriched by the synthesis and review papers from RILEM Technical Committees according to the decision of TAC in spring 2021. The chairs and members of the committees are thus encouraged to propose their letters to the editors.

The team of associate editors has been reinforced in 2021 with two new members. Prof. Daman Panesar from University of Toronto (Canada) will support the team on the topics of hydration, supplementary cementitious materials and reduced emissions. Prof. Klaartje De Weerd from Norwegian University of Science and Technology (Norway) will take care of the new submissions devoted to hydration and durability of cement-based materials. With the fully dedicated team of 14 associate editors and support of the voluntary reviewers, who are very often active members of the RILEM community, the journal has reached a very well balanced and versatile expertise and, last but not least, can offer the authors a fast response time.

The most advanced articles and the open access policy continue to guarantee the high visibility and impact of the journal. This can be assessed in very concrete terms thanks to the inclusion in Scopus index in 2020. According to Scopus' Cite Score metric that reached 3.3 in November 2021, the journal ranks in the 54<sup>th</sup> percentile of most cited journals in the field of general materials science and 74<sup>th</sup> percentile in the field of general engineering. The articles from all six volumes have been downloaded over 125 000 times (median over 560 times per article). With 650 citations in total (counting only sources indexed in Scopus), the articles have been cited on average 6 times per article.

As in previous years, we encourage all RILEM members to submit their interesting works to the journal free of charge and offer full open access of the articles. The proposed topics can be submitted for consideration to the editor-in-chief, Prof. Alexandra Bertron, or to the members of the editorial board. Please visit the journal at [letters.rilem.net](https://letters.rilem.net).





# Proceedings, STARs & Recommendations

Besides the two journals, RILEM also publishes proceedings, state-of-the-art reports (STAR), and recommendations. 2021 has been a successful year in this respect, with 7 proceedings, 4 STARs and 9 Recommendations.

## Proceedings published by Springer in 2021

- Proceedings of the RILEM International Symposium on Bituminous Materials (ISBM 2020); Eds. H. Di Benedetto (et al.); Vol. 27
- International RILEM Conference on Early-Age and Long-Term Cracking in RC Structures - CRC 2021; Eds. F. Kanavaris, F. Benboudjema, M. Azenha; Vol. 31
- Proceedings of the 3rd RILEM Spring Convention and Conference (RSCC2020) Volume 1: Strategies for a Resilient Built Environment; Eds. E. Pereira, J. Barros, F. Figueiredo; Vol. 32
- Proceedings of the 3rd RILEM Spring Convention and Conference (RSCC 2020) Volume 2: New Materials and Structures for Ultra-durability; Eds. I. Valente, A. Ventura Gouveia, S. Dias; Vol. 33
- Proceedings of the 3rd RILEM Spring Convention and Conference (RSCC 2020) Volume 3: Service Life Extension of Existing Structures; Eds. J. Sena-Cruz, L. Correia, M. Azenha Miguel; Vol. 34
- Proceedings of the 3rd RILEM Spring Convention and Conference (RSCC 2020) Volume 4: Shift to a Circular Economy; Eds. V. Cunha, M. Rezazadeh, C. Gowda; Vol. 35
- Fibre Reinforced Concrete: Improvements and Innovations II - X RILEM-fib International Symposium on Fibre Reinforced Concrete (BEFIB) 2021; Eds. P. Serna, A. Llano-Torre, J.R. Martí Vargás, J. Navarro-Gregori; Vol. 36

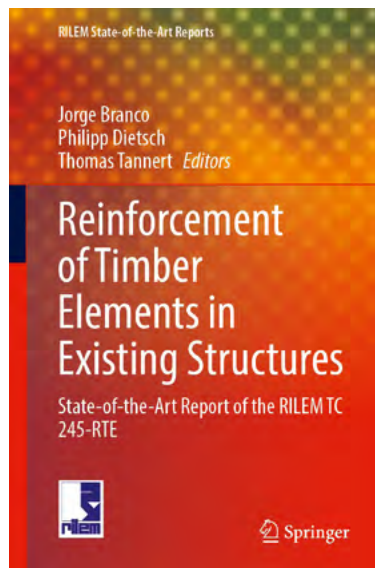
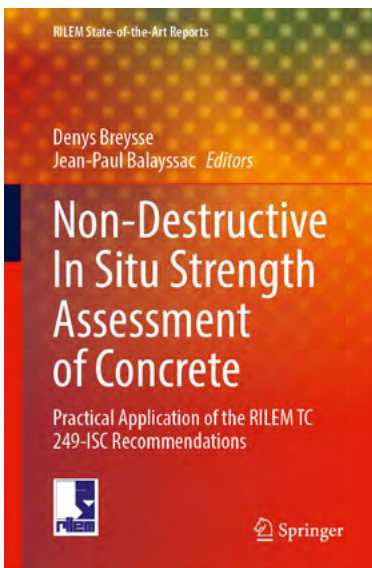
## STARs published in 2021

- Non-destructive in situ strength assessment of concrete - Practical Application of the RILEM TC 249-ISC Recommendations; Edited by Denys Breysse, Jean-Paul Balayssac; Vol. 32
- Reinforcement of existing timber elements and structures - State-of-the-art report of the RILEM Technical Committee 245-RTE; Edited by Jorge Branco, Philipp Dietsch, Thomas Tannert; Vol. 33
- Round-Robin Test on Creep Behaviour in Cracked Sections of FRC: Experimental Program, Results and Database Analysis - State-of-the-Art Report of the RILEM Technical Committee 261-CCF; Edited by Aitor Llano-Torre, Pedro Serna; Vol. 34
- Testing and Characterisation of Earth-based Building Materials and Elements - State-of-the-Art Report of the RILEM Technical Committee 274-TCE; Edited by Antonin Fabbri, Jean-Claude Morel, Jean-Emmanuel Aubert, Quoc-Bao Bui, Domenico Gallipoli, B.V. Venkatarama Reddy; Vol. 35

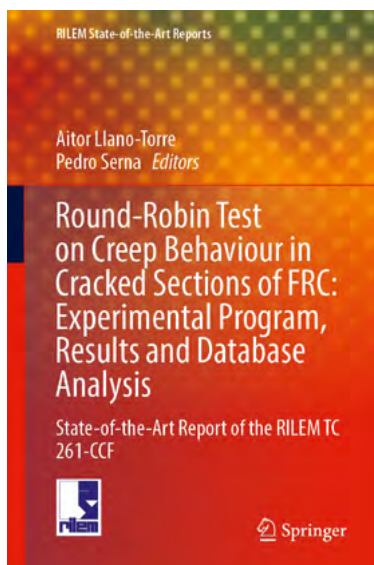
## Recommendations published in 2021

- [Recommendation of RILEM TC 261-CCF: test method to determine the flexural creep of fibre reinforced concrete in the cracked state](#), May 2021
- [Recommendations of RILEM TC 287-CCS: thermo-chemo-mechanical modelling of massive concrete structures towards cracking risk assessment](#), June 2021
- [Recommendation of RILEM TC 258-AAA: RILEM AAR-0 outline guide to the use of RILEM methods in the assessment of the alkali-reactivity potential of concrete](#), October 2021

- [Recommendation of RILEM TC 258-AAA: RILEM AAR-8: determination of potential releasable alkalis by aggregates in concrete](#), October 2021
- [Recommendation of RILEM TC 258-AAA: RILEM AAR-10: determination of binder combinations for non-reactive mix design using concrete prisms– 38 °C test method](#), October 2021
- [Recommendation of RILEM TC 258-AAA: RILEM AAR-11: determination of binder combinations for non-reactive mix design or the resistance to alkali-silica reaction of concrete mixes using concrete prisms – 60 °C test method](#), October 2021
- [Recommendation of RILEM TC 258-AAA: RILEM AAR-12: determination of binder combinations for non-reactive mix design or the resistance to alkali-silica reaction of concrete mixes using concrete prisms – 60 °C test method with alkali supply](#), October 2021
- [Recommendation of RILEM TC 258-AAA: RILEM AAR-13: application of alkali-wrapping for concrete prism testing to assess the expansion potential of alkali-silica reaction](#), October 2021
- [RILEM Standard: testing methods for determination of the double-K criterion for crack propagation in concrete using wedge-splitting tests and three-point bending beam tests](#), recommendation of RILEM TC 265-TDK, November 2021



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# RILEM Honours and Awards

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**RILEM awards the following recognised distinctions annually:**

## Robert L’Hermite Medallist

The medal is awarded to a researcher under the age of 40, who has made an exceptional scientific contribution to the field of construction materials and structures.

## Gustavo Colonnetti Medallist

Up to two Gustavo Colonnetti Medals are awarded to researchers under the age of 35, who have made an outstanding scientific contribution to the field of construction materials and structures.

## RILEM Fellows

Created in 1993 by the General Council, the honorary title of RILEM Fellow is bestowed upon RILEM Senior Members who have made exceptional contributions to RILEM in their capacities as research scientist, engineer, technical leader or educator.

## RILEM 2021 Medallists



### Dr Klaartje De Weerd, Robert L’Hermite Medallist 2021

Dr Klaartje De Weerd is a Professor at the Department of Structural Engineering, Faculty of Engineering Science of the Norwegian University of Science and Technology (NTNU), Norway. Dr De Weerd has been a RILEM member since 2007. She is the Deputy Chair of RILEM [TC ASR “Risk assessment of concrete mixture designs with alkali-silica reactive \(ASR\) aggregates”](#), and member of several TCs. Dr De Weerd’s field of research is concrete with expertise within cement hydration and durability. Dr Weerd is the 2021 Robert L’Hermite medallist.

**Short extract from the interview with Dr De Weerd**  
(the full interview can be read [here](#))

**RILEM Implementation Manager (RIM):** *When did you join RILEM?*

**Dr De Weerd:** *My first RILEM activity was actually a RILEM PhD course which was organized by Prof. Mette Geiker at DTU, Denmark in 2007... We were a group of about*

15 students. Many of the participants are now researchers at various universities, authorities and research institutes. These courses are very important both with regard to sharing state of the art knowledge and network building. RILEM is able to collect the best researchers within a field.

From my own experience these are very important networking events both for PhD students and researchers.

The presentation “Chloride binding - recent investigations and recognised knowledge gaps” of the 2021 Robert L’Hermite medallist, Klaartje De Weerd, Norwegian University of Science and Technology (NTNU), Norway, at the 75<sup>th</sup> RILEM Annual Week is available at <https://youtu.be/SBrvazTsQ9c>



### Dr Emilio Martínez-Pañeda, Gustavo Colonnetti Medallist 2021

Dr Emilio Martínez-Pañeda is a Senior Lecturer and 1851 Research Fellow at Imperial College London, UK. Dr Martínez-Pañeda’s research efforts aim at understanding, predicting and optimising the mechanical response of materials. Current interests include the embrittlement of metals in aggressive environments, dislocation-based continuum plasticity, micromechanics of rock fracture, multi-physics modelling, and the development of computational methods for predicting fracture and fatigue. Dr Martínez-Pañeda is one of the two 2021 Gustavo Colonnetti medallists.

#### Short extract from the interview with Dr Martínez-Pañeda (the full interview can be read [here](#))

##### RILEM Implementation Manager (RIM):

*I have one last question for you Emilio: is there anything that you particularly enjoy as a RILEM member?*

**Dr Martínez-Pañeda:** *There are many things about RILEM that I like, of course. But the one that I like most is the people. The community of people that RILEM puts together encompasses leading professionals from both academia and industry, with common interests. You get the chance to meet remarkable people. And this is also very important for our work of course. For example, European projects typically require building consortia across academia and industry. By joining RILEM one can easily build such a network.*

The presentation “Predicting the lifetime of infrastructure susceptible to hydrogen embrittlement and corrosion damage” of the Gustavo Colonnetti Medallist, Emilio Martínez-Pañeda, Imperial College London, UK, at the 75<sup>th</sup> RILEM Annual Week is available at <https://youtu.be/cSFxef5GJLs>



### Dr Prannoy Suraneni, Gustavo Colonnetti Medallist 2021

Dr Prannoy Suraneni is an Assistant Professor at the Department of Civil and Architectural Engineering of the University of Miami, USA. Dr Suraneni has been a RILEM member since 2018. He is the Deputy Chair of RILEM TC [EBD “Test Methods to evaluate durability of blended cement pastes against deleterious ions”](#).

Dr Suraneni is also an officer of the RILEM Educational Activities Committee (EAC). Dr Suraneni is an expert in the materials science, chemistry, and engineering of cementitious materials. His research strives to develop long-lasting concrete with low CO<sub>2</sub> emissions through the use of novel waste materials. Dr Suraneni is one of the two 2021 Gustavo Colonnetti medallists.



**Short extract from the interview with Dr Prannoy Suraneni**  
(the full interview can be read [here](#))

**RILEM Implementation Manager (RIM):**

*I have two last questions for you: 1) where do you see yourself in RILEM in the future and 2) where do you see RILEM in the future?*

**Dr Martínez-Pañeda:** *Dr Suraneni: I definitely want to keep contributing to RILEM as long as my years go. The amount of time that you can put into RILEM goes up and down, but ultimately being part of such an organization is very beneficial. You learn so much. I have to be honest: I feel the same about ASTM and ACI. These are the three organizations that are very close to my heart. Sometimes I spend more time here, other times there. But the nice thing is that I get very complimentary information from the three of them and can contribute to them in different ways. I see myself being involved in them for the rest of my career, life maybe is too much....*

The presentation “Supplementary cementitious materials reactivity: from model systems to concrete” of the Gustavo Colonnetti Medalist, Prannoy Suraneni, University of Miami, USA, at the 75<sup>th</sup> RILEM Annual Week is available at <https://youtu.be/fjFbWW6ByXs>

## 2021 RILEM FELLOWS



**Prof. Barzin Mobasher, Arizona State University, USA**, has been nominated RILEM Fellow in recognition of his exemplary leadership as Technical Advisory Committee convener, and his work as Associate Editor of Materials and Structures, as well as his active participation in the RILEM standing committees.



**Prof. Hans D. Beushausen, University of Cape Town, SOUTH AFRICA**, has been nominated RILEM Fellow in recognition of his exemplary leadership as the Chair of the RILEM Development Advisory Committee and his active participation in several Technical Committees.



**Prof. Dr Alexandra Bertron, INSA Toulouse, FRANCE**, has been nominated RILEM Fellow in recognition of her exemplary leadership as the RILEM Technical Letter Editor-in-Chief, Technical Activities Committee convener, and Technical Committee Chair, as well as for her active participation in the RILEM Recommending committee.



**Prof. John Provis, University of Sheffield, UK**, has been nominated RILEM Fellow especially in recognition of his dedication to RILEM as 2020 Honorary President, his successful efforts to organize the online 74<sup>th</sup> RILEM Annual Week during the Covid pandemic, his exemplary leadership as the RILEM *Materials and Structures* Editor-in-Chief, as well as his active participation in the RILEM Technical Letter Board of Editors, Technical Advisory Committee and many RILEM Technical Committees.



# RILEM Worldwide

As part of its activities, the Development Advisory Committee develops new initiatives and new activities for continuously improving the promotion of RILEM worldwide, in cooperation with TAC and EAC. The conveners of RILEM Regional Groups are steering these activities in their regions and assist with initiating and organizing events, facilitating the exchange of information, and giving RILEM a general presence in the local and regional research and industry landscapes. In this respect, the past year has been a very active one, with many successful activities reported from around the world.

Naturally, due to the COVID pandemic this year many events were held online. In a certain way, this has facilitated the connection with members around the world, enhancing the cooperation on research projects. Overall, 2021 has been fruitful in terms of increasing RILEM’s footprint in the various regions worldwide. Increasing adaptation to the online meeting place is expected to also facilitate RILEM’s worldwide activities in the near and distant future.

An overview on some of the worldwide activities is given in the following sections.

## East Europe and Central Asia

A new Presidium has been elected in the East European and Central Asian region. The mandate of the Regional Convener Prof. Dr Vyatcheslav R. Falikman, NIIZhB, Russian Federation, was

exceptionally extended to the end of 2023. In November 2020, a seminar and conference on dry building mixes “MixBuild-2020” were held at the Expocenter, Moscow. In December 2020, a specialized conference and exhibition for concrete and precast concrete technologies ICCX 2020 were held in St. Petersburg, which presented an opportunity to market the activities of RILEM to the local and regional industries.

A report about the current activity of RILEM was presented at the Annual meeting of the International Engineering Academy.

GETUJI I VYENIENIUSTUJTI Scientific and technical journal

HOBOCTU RILEM

### Message from the RILEM President, Prof. Ravindra Gettu



RILEM is an organization that has been endeavouring for about 75 years to bring together researchers and experts in construction materials, structures and systems. It is based in Paris, France, with a membership that extends across the globe.

RILEM has about 40 technical committees, open to all its members, that work on state-of-the-art reports, recommendations and other documents that consolidate recent developments. The documents are available, mostly for free, on our website [www.rilem.net](http://www.rilem.net).

In addition to our well-known *Materials and Structures Journal*, we have *RILEM Technical Letters*, the RILEM Open Access journal devoted to disseminating breakthrough and up-to-date contributions in the field of construction materials science. It is published as a Diamond Open Access journal available online free of charge.

After an enduring partnership with the *Russian International Academy of Engineering (IAE)*, RILEM started its partnership with the *Russian Association of Structural Concrete* in 2020. We are very proud of this association and look forward to a fruitful and active alliance in the coming years. We have to acknowledge our Regional Convener for East Europe and Central Asia, Prof. Slava Falikman, who has put in a lot of effort in promoting RILEM in Russia and other countries over the years. We plan to have a regular contribution in the technical magazine *Concrete and reinforced concrete* of the National Association «Structural Concrete», to keep Russian researchers and practitioners updated with the RILEM events, publications and news. This is the first RILEM update. We hope you enjoy it!

Конференция и семинар – 2020



© Vyatcheslav R. Falikman

The RILEM flyer and RILEM Annual Report were distributed among the Group of Young Professionals, a group of 100 members from different regions of Russia acting on the basis of the Structural Concrete Association.

Finally, for the first time the issue of “RILEM Updates” prepared by the RILEM implementation Manager, Dr Daniela Ciancio, was published in the Russian journal “Concrete and Reinforced Concrete”. And a large review about the GLOBE initiative was published in the journal “Concrete and Reinforced Concrete”.

### North America

Due to COVID-19, a majority of in-person activities were cancelled or moved to online versions. In North America, this has limited the abilities to network with members and other individuals in the technical community, and it has tempered the progress in enhancing the partnerships with other organizations, such as ACI and the cements division of ACerS. Nevertheless, RILEM maintained its visibility in ACI through the co-sponsorship of several technical sessions during the virtual conventions. When in-person activities resume, it is anticipated that the partnerships with these and other organizations will strengthen and expand. In the last year, the North American and Caribbean region was also strengthened with a strong increase in membership, especially young members. This is mainly the product of the initiatives from the RILEM Youth Council, with David Orense as the regional representative.

### China

Ongoing RILEM activities in China are largely related to increasing contributions by national experts in various RILEM TCs, as well as organization of several international events and conferences.

Three TCs are ongoing with the chairs belonging to RILEM-CN group, including TC 289-DCM, TC 284-CEC, and TC 285-TMS. The works of these TCs are advancing as expected.

President Li Zongjin co-organized the 2021 International Conference on 3D Printing Concrete Materials and Structures and delivered an opening speech on 15<sup>th</sup> May 2021; RILEM China Group provided China Gezhouba Group Cement Co. Ltd, with special training of concrete quality management technicians. RILEM 2019 Honorary President Miao Changwen was invited to participate in the 2021 World Transportation Engineering Technology Conference (WTC)



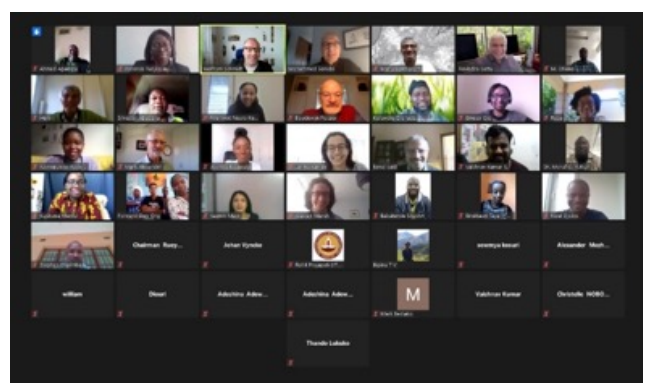
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and the 2021 International Green Building and Building Energy Conservation Conference, and gave Keynote speeches.

This activity might explain the ongoing increase of RILEM members in this region.

### Sub-Saharan Africa

Due to the pandemic, most planned activities in the sub-Saharan region were converted to digital formats. Supplementary new digital events were developed. Some educational activities that required presence had to be cancelled or delayed. Three major virtual conferences were held between August 2020 and September 2021. The virtual conference “Materials and value chains for sustainable, inclusive, and resilient urbanisation in Africa” organised by BAM, UNILAG and IITM attracted more than



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700 attendees. The Young Concrete Researchers, Engineers & Technologists Symposium (YCRETs), which was planned as a face-to-face conference by the Concrete Society of Southern Africa and the University of the Witwatersrand, was held digitally after it had been shifted already before. The event successfully connected young researchers in Africa. The “Global Partnership for Sustainable Construction and Resource Efficiency” conference organised by Meru University and University of Padova illuminated aspects of sustainability in Africa and the world from a vast range of perspectives. Besides the events, the African chapter of the RYC discussed intensively, how obstacles for young African researchers to participate in RILEM can be reduced and which next steps need to be taken to reach out all over the continent.

### South Asia

In the midst of the COVID pandemic in 2021, RILEM South Asia witnessed a significant growth in membership. With the new affordable fee structure for young members, the region was able to attract a total of 296 members (with about 165 young members). With this new members, RILEM South Asia region is aiming at building new professional networking opportunities. With the help of the RILEM Implementation Manager, 12 newsletters have been published in the monthly issues of the Indian Concrete Journal, which is helping popularizing RILEM in this region. However, the South Asia region marked a good presence in the RILEM

Week in Merida, Mexico, by making more than 20 online presentations and receiving two Best Student Poster awards. As an important initiative, the South Asia region and IIT Madras (with the help of RILEM Youth Council and RILEM Secretariat) organized the first “PhD Symposium on Construction Materials – Technologies for Low Carbon & Lean Construction” on September 23, 2021. This online symposium enabled interaction between young researchers and the world-renowned experts in their domain. About 30 PhD students/recent graduates (from Bangladesh, China, Ghana, India, Kuwait, Malaysia, Nigeria, Singapore, Sri-Lanka, South Africa, South Korea, United Kingdom and Zimbabwe, etc.) made 3-minute presentations on their key research findings and made this event a grand success. This was attended by about 300 researchers from across the world. South Asia Region is planning to conduct more such events catering to the young researchers worldwide. (Contact: [rilemsouthasia@gmail.com](mailto:rilemsouthasia@gmail.com))

### Latin America

This year has been very active in Latin America. In June 2021 RILEM signed an international partnership agreement with FICEM, the Federacion Interamericana del Cemento (Inter-American Federation of Cement). So far, the institutions have exchanged respective news and helped each other to circulate useful



information for their members. The parties are currently working on a joint event in 2022. In November 2020, RILEM renewed the international partnership agreement with ALCONPAT - Asociación Latinoamericana de Control de Calidad, Patología y Recuperación de la Construcción. ALCONPAT has been very helpful in circulating RILEM news through its channels. RILEM has circulated the Revista ALCONPAT, published in Spanish, English and Portuguese. TAC approved the co-sponsorship of RILEM to the XVI Congreso Latinoamericano de Patología de Construcción.

The editor in Chief of Revista ALCONPAT is Prof. Pedro Castro Borges that in 2021 has been the RILEM Honorary, together with Prof. Alejandro Duran-Herrera and Prof. Jose Ivan Escalante Garcia, Prof. Castro organised the 75<sup>th</sup> RILEM Annual Week and the International Conference on Advances in Sustainable Construction Materials and Structures in Merida, Mexico, from 30<sup>th</sup> August to 3<sup>rd</sup> September 2021. The event took place in hybrid mode due to the current COVID situation. It was a successful conference with around 230 abstracts written by 770 authors from 31 countries.

In 2021, around 40 new members joined RILEM from the Latin America region, amongst which the Facultad de Ingeniería Civil (FIC), Universidad Autónoma de Nuevo León (UANL) – Mexico, that joined as corporate member.

### **Middle East and North Africa**

Several contacts were made to promote RILEM membership in the North African and Middle Eastern regions, including associations and universities in Morocco, Egypt, Algeria,

Tunisia, Lebanon, Turkey. The CMSS2021 was organized in Rabat on 24-26 November 2021. Regional Convener Dr Mohammed Sonebi, as the chair of the Scientific Committee, invited RILEM President Dr Ravindra Gettu to deliver a keynote with other RILEM members. The visibility of RILEM and associated membership numbers in the region are expected to increase further as a result of the RILEM Spring Convention in Rabat, Morocco, in 2023. Additionally, Dr Mohammed Sonebi was invited by the Chief-Editor of RILEM Technical Letter to lead a paper (in progress) with some colleagues from North Africa and Middle East on local construction materials used in this region which will be submitted by next year 2022.

Regional Convener Dr Mohammed Sonebi, Queen's University Belfast, United Kingdom, mandate was extended to end of 2022 for Rabat Spring Meeting organization.

### **Europe**

Europe has traditionally been the region where RILEM has the highest visibility and the highest number of members. In 2021, the promotion of RILEM was planned for events in several locations on the continent, which are too numerous to be listed here. Due to the limitations posed by the pandemic, most events in Europe were virtual.

Due to the COVID pandemic, the 4<sup>th</sup> RILEM Spring Convention and Strategic Workshop were held online in April 2021, in replacement of the 75<sup>th</sup> RILEM Anniversary, formerly planned to be celebrated in Paris. The RILEM Strategic workshop held in April holds a special place. Around 120 people from all



© M. Sonebi

over the world joined the opening ceremony (the video is available on the RILEM [YouTube Channel](#)). The conclusions of each session were presented at the end of the day. The outcomes/proposals of this workshop were discussed among the RILEM Standing Committees (TAC, EAC and DAC) and some of them are currently being implemented.

A new Regional Convener for the region has been nominated at the Annual Week in Merida: Prof. Maria Stefanidou, Aristotle University of Thessaloniki, Greece.

### **East Asia**

A new Regional Convener for the region has been nominated at the Annual Week in Merida: Dr Guoqing Geng, NUS, National University of Singapore, Singapore

### **Pacific**

Professor Arnaud Castel, University of Technology Sydney, appointed as RILEM convener for the Pacific region at the beginning of 2021, has been very active in the region.

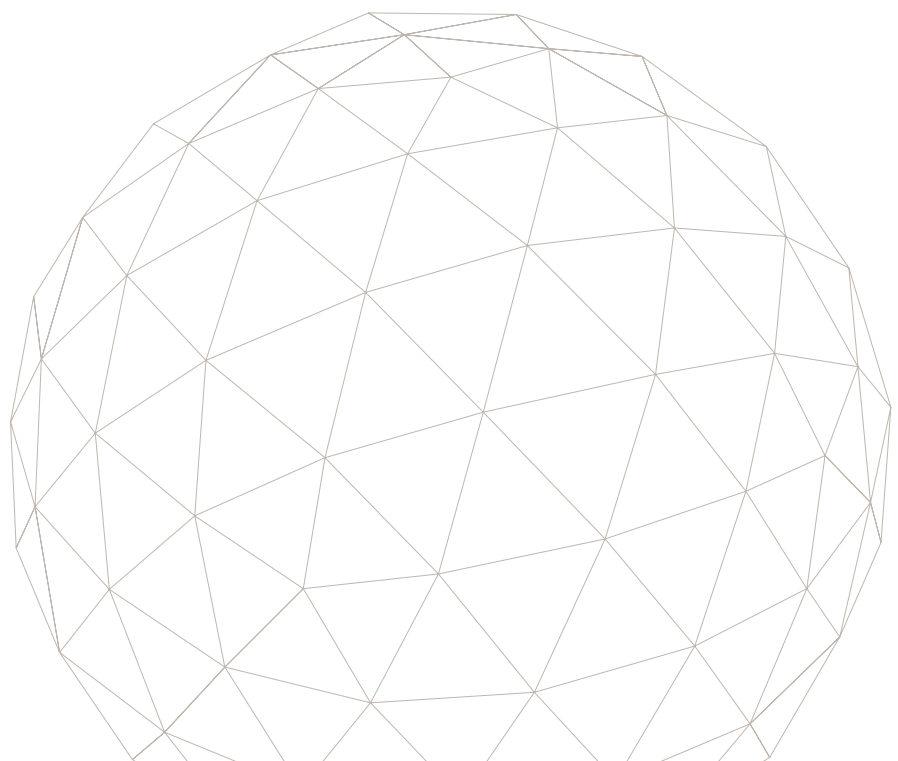
In June 2021, Dr Marie Joshua Tapas, research associate at University of Technology

Sydney and RILEM Youth Council Pacific representative, was invited by CIA to be the speaker of the “Young Member Group Webinar - The Pathway to Greener Concrete”. Dr Tapas talked about RILEM to increase the visibility of the association to young researchers and engineers in Australia.

RILEM President Ravindra Gettu was the speaker of the CIA webinar in July 2021. Prof. Gettu talked about Low concrete Technology. During this event, Professor Arnaud Castel provided details about RILEM including organization, strategy, and benefits for members.

In addition, Concrete in Australia, the magazine of the CIA, is publishing RILEM updates each quarter, thanks to the collaboration of Dr Daniela Ciancio, RILEM implementation manager.

The number of RILEM members in Australia has almost doubled from February to August 2021 due to the promotion of RILEM amongst young Australian researchers done by Dr Marie Joshua Tapas, RYC member and representative for the Pacific Region.



# International Partnerships

During the last five years, RILEM has established several strategic partnership agreements with national and international organisations from around the globe. These partnerships are very helpful for the exchange of organisational, technical, and educational information, and they promote an optimal spread of state-of-the-art information concerning construction and building materials all over the world. RILEM values its partners and the associated joint workshops and conferences. Some partnerships have also resulted in joint technical activities and joint publications.

In 2021, RILEM established new partnerships with:

- FICEM, Federación Interamericana del Cemento (InterAmerican Cement Federation)
- ASMATEC, Association Sciences des Matériaux et Technologies de Construction (Association of Material Sciences and Construction Technology) and renewed its partnership agreement with:
- AATH, Asociación Argentina de Tecnología del Hormigón (Argentinian Association of Concrete Technology)

RILEM counts a total of 16 partnerships that were established since 2000.



# GLOBE JCGC (Press release)

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Press Release from the Liaison Committee of International Associations of Civil Engineering

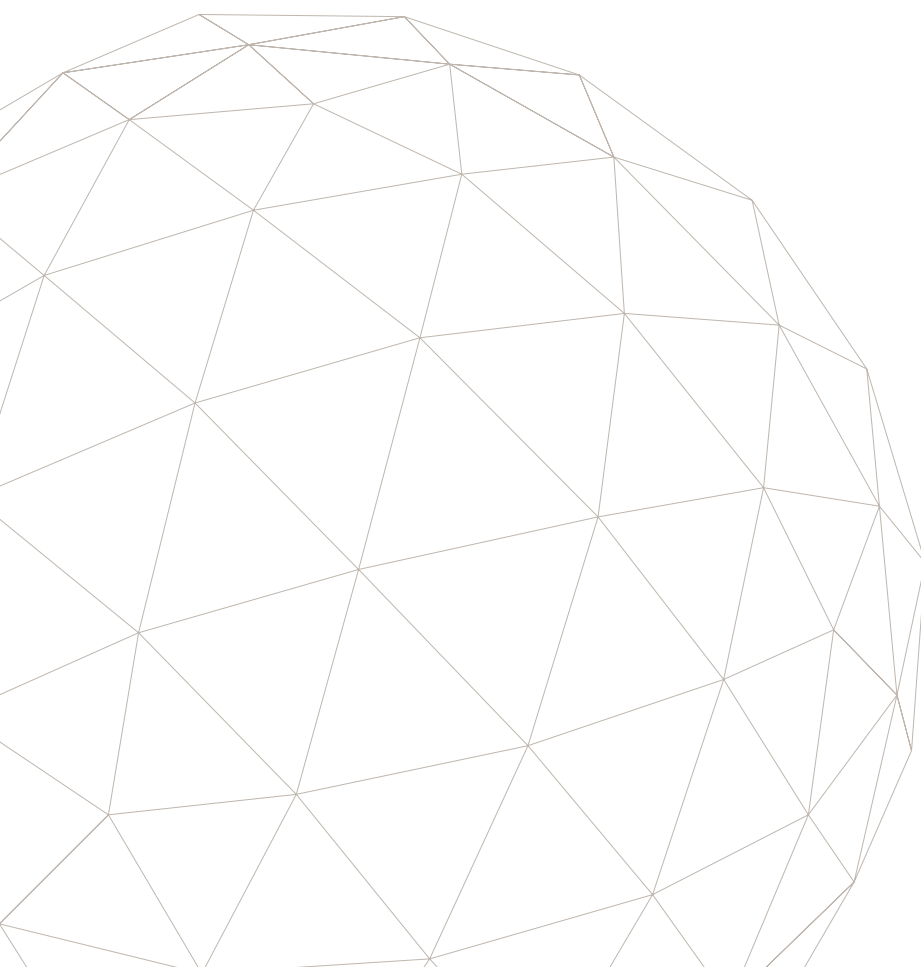
## New Joint Committee on the GLOBE Consensus (JCGC) for Sustainable Development of the Built Environment



The Liaison Committee of six of the largest international associations active in the civil engineering sector and representing experts from more than 150 nation states has launched the Joint Committee on the GLOBE Consensus (JCGC). The purpose is to lead the global green transition of civil and structural engineering and building materials sciences, the backbone of the built environment and most of societal infrastructure systems. The Liaison Committee published the GLOBE Consensus in 2020. This is a statement from world-leading experts in structural engineering and material sciences, highlighting the urgent need to improve sustainability in the built environment and pointing at key facilitators and instruments for achieving this. Whilst positive signs were observed at the recent COP26 Conference in Glasgow, societal decision makers have not fully recognised the role of the built environment – and civil engineering in particular – as a major challenge and obstacle for global sustainable development. Now the Joint Committee on the GLOBE Consensus (JCGC) will prepare and disseminate policy advice and existing knowledge on how to build, manage and renew structures sustainably, and where relevant, develop new fundamental knowledge. The JCGC has an explicit focus on the global challenges of sustainability in the built environment, the different contexts associated with different geographies, cultures and needs for further developments, and how these differences must be accounted for locally when identifying how to enhance sustainability globally. The Committee's view is that a substantial part of the built environment sustainability challenge may be overcome using the best already-available knowledge adapted to the local contexts.

## NOTES TO EDITORS

1. The Liaison Committee coordinates the activities of the following six major international associations, see [www.iabse.org/About/Liaison-Committee](http://www.iabse.org/About/Liaison-Committee) for more information:
  - International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM)
  - International Council for Research and Innovation in Building and Construction (CIB)
  - European Convention for Constructional Steelwork (ECCS)
  - International Federation for Structural Concrete (fib)
  - International Association for Bridge and Structural Engineering (IABSE)
  - International Association for Shell and Spatial Structures (IASS).
2. For details of the GLOBE Consensus and how to express support, see [www.rilem.net/article/globe-global-consensus-on-sustainability-in-the-built-environment-192](http://www.rilem.net/article/globe-global-consensus-on-sustainability-in-the-built-environment-192).
3. To support the GLOBE Consensus, please fill in the form on the dedicated webpage: <https://docs.google.com/forms/d/1hMZlpB-fM0PtBVG6LcXseyLMiVDmxdxyycyb40wEY/edit#responses>
4. For further information on the JCGC and the GLOBE Consensus, please contact the Chair of the Committee Michael Havbro Faber: [mfn@build.aau.dk](mailto:mfn@build.aau.dk).
5. For further information on the work of the Liaison Committee, please contact its secretary Don Ward, Chief Executive of CIB: [Don.Ward@CIBworld.org](mailto:Don.Ward@CIBworld.org).



# RILEM Corporate Members





# Financial statement for the year 2020

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From a financial point of view, RILEM consists of two distinct entities. The first one is an association under Swiss law, but established in France, non-profit, without VAT and non-taxable, named RILEM Association. The association manages members and scientific, educational and development activities.

The second is a private company with a single shareholder (i.e., the RILEM Association), for profit, subject to VAT and profit tax, named EURL RILEM Publications. The company manages the publication activities of RILEM, in particular in its two scientific journals. *Materials and Structures*, the flagship journal of RILEM, is a hybrid international journal published by Springer Nature. *RILEM Technical Letters*, launched in 2016, is an open access journal published by RILEM. For these two journals, part of the publishing and management work is subcontracted to two third parties (the University of Sheffield and Empa).

The income for the RILEM Association comes from membership fees, both individual members and corporate members. The income from membership fees in 2020 (€330,846) is similar to that of 2019 and to the average of the last few years (see Figure 1).

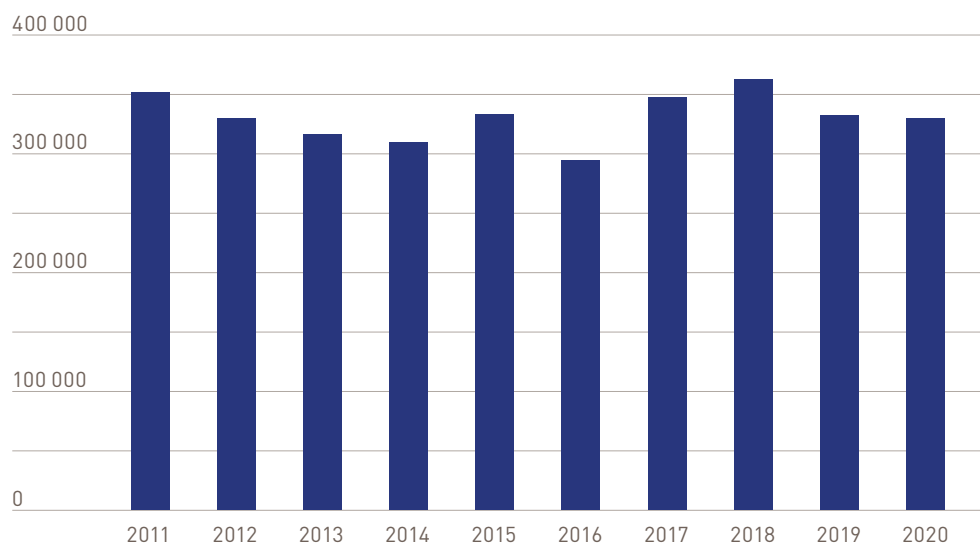
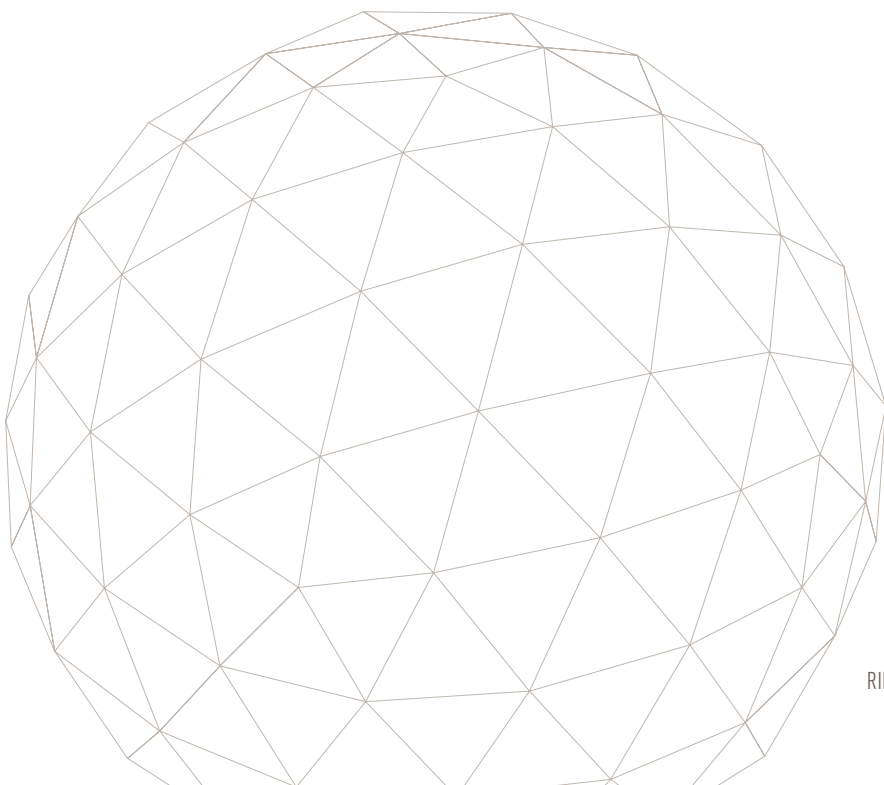


Figure 1 Membership fees (in €) in the last 10 years

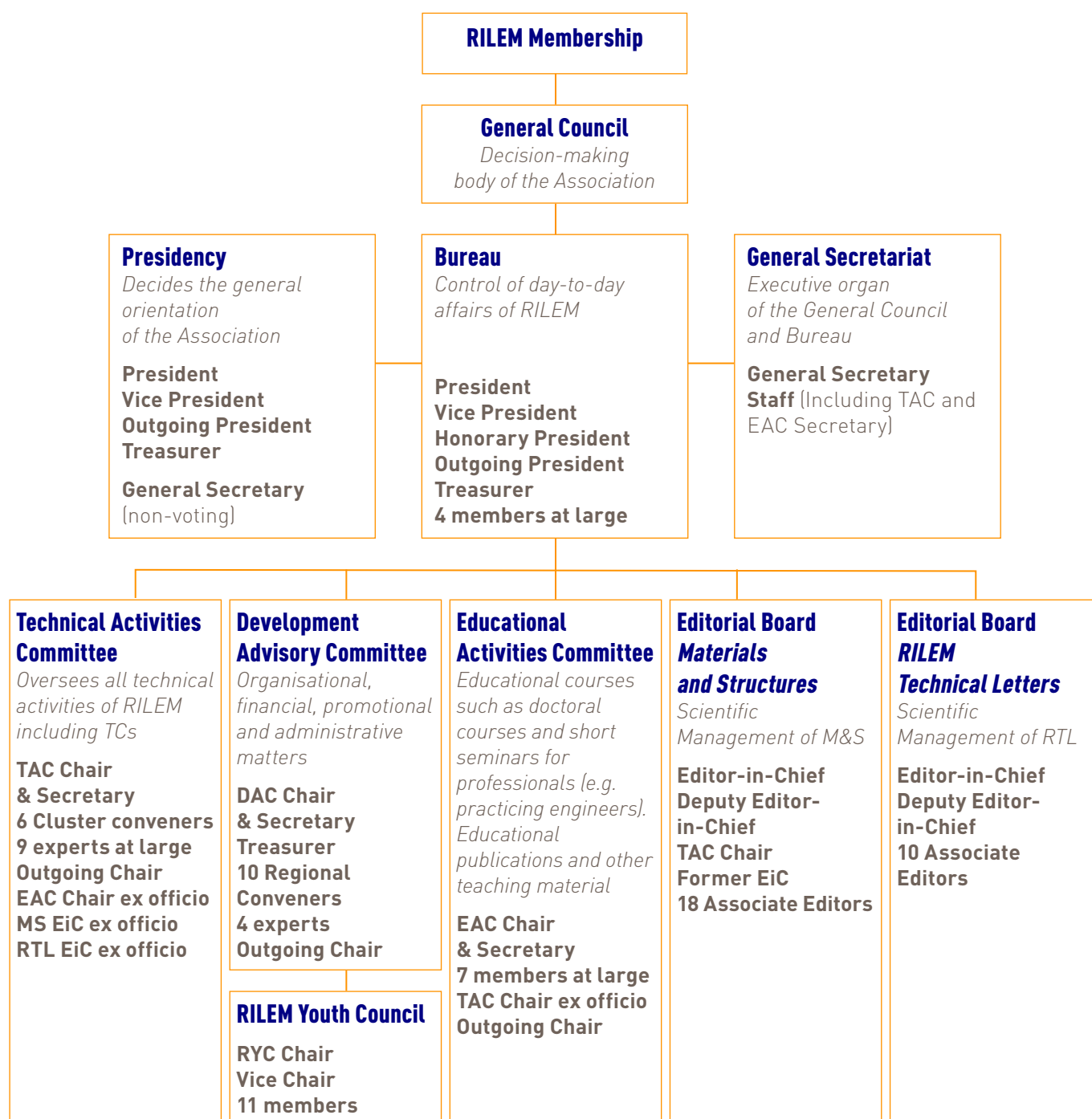


The net income for EURL RILEM Publications comes from royalties paid by Springer Nature on the revenue from the sale of *Materials and Structures*, mainly via consortia agreements. This revenue is reduced by the cost of giving free access to *Materials and Structures* for all RILEM members. The royalties paid by Springer Nature in 2020 decreased to €166,227 from €194,604 in 2019. This decrease is linked to a smaller number of papers published in 2019 in *Materials and Structures* compared to the previous years. The costs for RILEM Association are primarily the salary and expenses for the General Secretariat. Additional costs are due to the management of the two journals, which is outsourced. The association also pays the Article Processing Costs (APCs) for publishing a limited number of Open Access papers, selected by the Board of Editors, in the journal *Materials and Structures*. Starting in 2019, an external consultant (the RILEM Implementation Manager, RIM) has been hired to increase the visibility of RILEM especially among young researchers and within the industry. Several actions to promote young researchers in RILEM have been also sponsored, including awards for best posters at conferences and the main RILEM awards for young researchers, the Colonnetti and L'Hermite medals. In the pandemic year 2020, travelling expenses have been reduced to a minimum, including sponsored students and staff.

For 2020, the financial result of RILEM Association was negative, - €120,799. The financial result of EURL RILEM Publication was also negative, - €38,983. The negative combined result of - €159,782 compares very well with the expected result of - €154,000 presented at the General Council 2020 in Sheffield. The negative result in 2020 is the expected consequence of the choice made by the RILEM Management of investing in a number of initiatives to give back to the RILEM members a part of the equity. Negative results are expected for a couple of more years, with a balanced budget to be reached in 2024 or 2025. The equities of both the association and the company are currently large enough to compensate for a few years of negative results.



# RILEM Organisation Chart



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# Upcoming major events for 2022 and beyond

## 5<sup>th</sup> RILEM Spring Convention 2022 - RILEM 75<sup>th</sup> Anniversary, 14-19 March 2022, Paris, France

It will include the 5<sup>th</sup> RILEM Spring Convention, with RILEM Standing Committees and Technical Committees meetings and a whole day event will be held on the 17<sup>th</sup> of March, with presentations on the following topics:

- Construction materials and research
- Sustainability & future of construction
- Strategy & perspective of RILEM

A Symposium will be held on 18 and 19 March 2022: International Conference on Earthen Construction: Fundamentals and Applications for a Circular Economy. More information at <https://conf-earth.sciencesconf.org>

## 76<sup>th</sup> RILEM Annual Week 2022 & International Conference on Regeneration and Conservation of Structures (ICRCS 2022), 3-9 September 2022, Kyoto, Japan

The 76<sup>th</sup> RILEM Annual Week will be held in conjunction with the International Conference on Regeneration and Conservation of Structures (ICRCS 2022) on 3-9 September 2022 in Kyoto, Japan.

### Future RILEM Events

	Spring Convention	Annual Week
<b>2023</b>	Rabat, Morocco (Mohammed Sonebi)	Vancouver, Canada (Nemy Banthia)
<b>2024</b>	Milano, Italy (Liberto Ferrara)	Toulouse, France (Alexandra Bertron)
<b>2025</b>	Mendrisio, Switzerland (Christian Paglia)	Hanoi, Vietnam (Tuan Nguyen Vanand)
<b>2026</b>	Ghent, Belgium (Nele De Belie)	Nairobi, Kenya (Wolfram Schmidt)



**You can download all of our publications for free on the RILEM website**

RILEM would like to thank all contributors who made this 2021 Annual Report possible.

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**RILEM**

14-20 boulevard Newton  
77420 Champs-sur-Marne  
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Email [assistant@rilem.org](mailto:assistant@rilem.org)

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