



**CERENA**

Centro de Recursos  
Naturais e Ambiente

APRIL 2026

**20 YEAR  
EDITION  
#4**



# SCIENCE IN MOTION

YOUR MONTHLY CERENA NEWS

## CONNECT WITH US



[@cerena.pt](https://www.instagram.com/cerena.pt)



<https://cerena.pt/>



[CERENA - Centro de  
Recursos Naturais e  
Ambiente](#)



[info@cerena.tecnico.ulisboa.pt](mailto:info@cerena.tecnico.ulisboa.pt)



Av. Rovisco Pais, nº1  
049-001 Lisboa



(+351) 218 417 425

# This edition in a glance

A message from the President

2

## March Highlights



**March, 18<sup>th</sup>**

Amélia Dionísio participates in "Explica-me"



**March, 20<sup>th</sup>**

Ricardo Araújo participates in 7<sup>th</sup> conference for Teachers



**March, 26<sup>th</sup>**

CERENA Seminar

A word about the beginning of CERENA's newsletter by Henrique Matos

6

8 Community News

18 Inside our labs

16 PhD Defenses

19 Latest in the press

17 Pre-Award

21 Upcoming

# A message from the President

Spring is back, and with it comes one of **CERENA's most significant activity of collective reflection: the Annual Meeting**. The fifth edition will take place on May 14th–15th, 2026, once again bringing our community together in Foz do Arelho. This meeting has become a cornerstone of CERENA's life and a collaborative space to align strategies, strengthen our shared identity, and devise paths toward common goals. **CERENA's community presence, ideas, and engagement are essential to shaping the Centre's future**. The Annual Meeting is not only a forum for discussion, but an opportunity to co-create CERENA's strategic direction, strengthen collaborations across domains, and reinforce the sense of belonging to a shared scientific endeavour.

While the challenges linked to the sustainable development of raw materials and energy resources remain substantial, this edition of the Newsletter invites us to look back to CERENA's origins. We revisit the integration of chemical engineering into the Centre and reflect on the earliest editions of this very Newsletter. At the time, **the Newsletter represented a true turning point in internal communication, fostering cohesion and accelerating the growth of our community**. Over the years, CERENA's Newsletter has evolved in form and scope, but its essence has remained unchanged. It continues to serve as a platform to **promote multidisciplinary and cross-pollination between disciplines to addressing today's industrial and societal challenges**. As we gather once more this spring, let us use the Annual Meeting as a moment to listen, to contribute, and to imagine together. **The next big idea, and perhaps the next transformative step for CERENA, may begin in Foz do Arelho**.

Leonardo Azevedo

# March highlights



## Amélia Dionísio participates in “Explica-me”

On **18<sup>th</sup> March, 2026**, Amélia Dionísio participated in “Explica-me como se tivesse 5 anos”, an initiative from Técnico Lisboa that aims to explain complex research themes to curious young minds (primary students).



In this class, Amélia explained to the curious students where we can find the mineral resources that make up the objects we use in our daily lives. The students were allowed to see rocks and minerals from up close, which prompted them to ask several questions. The full news can be read at Técnico’s website.



# March highlights



## Ricardo Araújo participates in the 7<sup>th</sup> Conference for Teachers

On **20<sup>th</sup> March 2026**, Ricardo Araújo took part in the 7<sup>th</sup> Conference for Teachers at Pavilhão do Conhecimento. This initiative aims to **promote learning experiences outside of the classroom.**

Ricardo participated in a roundtable discussion, with Rita Tavares (from Centro de Investigação em Didática e Tecnologia na Formação de Formadores, Universidade de Aveiro) and Catarina Silva (Centro de Informática e Sistemas, Universidade de Coimbra), about the use of Artificial Intelligence (AI) as a learning tool.



The panelists highlighted the necessity to regulate the use of AI for responsible applications. Rita, Catarina, and Ricardo disclosed to the teachers present how they take advantage of AI for their research projects and classes. The main takeaway was to **take better advantage of AI, rather than assuming students will not use it.** Ricardo presented his strategy of asking students what prompts they used and to critically improve them. Additionally, the advantages of literature search and protocol optimization were highlighted, showing that **AI can be a valuable tool when used correctly.**

# March highlights



## CERENA Seminar

On **26<sup>th</sup> March 2026**, CERENA hosted a seminar focused on *[In]Temporal Stone: Heritage, Nature, and Sustainability*. Amélia Dionísio invited Engineer Lia Mergulhão, from Instituto da Conservação da Natureza e das Florestas, and Conservator-Restorer Doctor Teresa Silveira. This seminar series is part of the 20<sup>th</sup>-year anniversary celebration of CERENA and aims to **bring academia and industry closer together**.

**Stone has geological and heritage value.** In this seminar, a first-time roundtable discussion about the relationship between these two aspects, the speakers explored how stone materials preserve environmental information. The climate changes we face nowadays contribute to the degradation of stone monuments, but **science can be an ally in promoting more sustainable conservation strategies.**



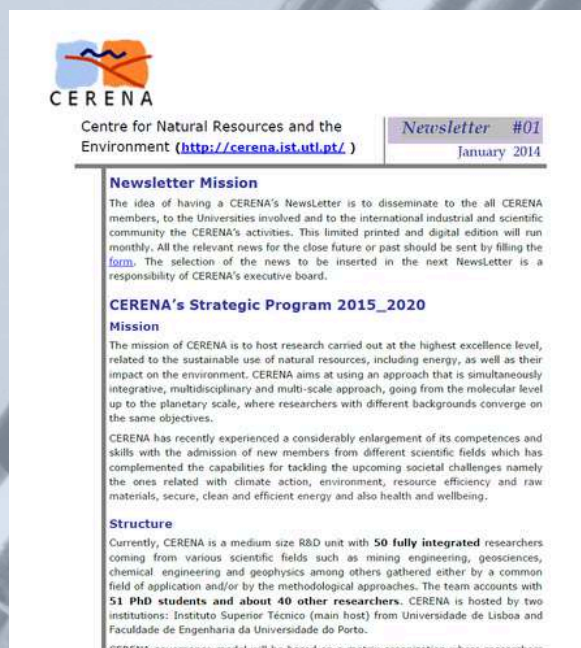
The importance of multidisciplinary teams was highlighted to contribute to more resilient heritage in the face of climate change.

# A word about the beginning of CERENA's newsletter by Henrique Matos

20 YEAR  
EDITION

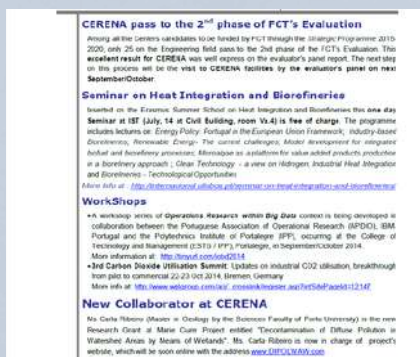
This month, to celebrate CERENA's 20<sup>th</sup> anniversary, we talked with **Henrique Matos**. Henrique did his bachelor's degree and PhD at Instituto Superior Técnico. During his PhD, Henrique focused on experimental thermodynamics, which later enabled him to use supercritical fluids to produce nanoparticles. As his PhD came to an end, Henrique, who was then part of the **CQE** (Centro de Química Estrutural), wanted to change scientific fields and **take on a more prominent role in chemical engineering processes**, with a closer relationship to industry. This decision led him to join **CPQ** (Centro de Processos Químicos) in 1993, which would be merged with CERENA in 2013.

**CPQ had two main research areas: one focused on the energy optimization of Portuguese industries and the other on organic chemistry.** In 1995, the researchers responsible for the energy optimization field became part of **GNIP**, a consortium of universities and companies, still active today, that promotes Process Integration in Portugal. Despite this important breakthrough, CPQ experienced the retirement of several members, which reduced its scientific productivity and ultimately lowered its FCT evaluation. **FCT recommended CPQ's fusion with a larger center**, which resulted in its fusion with CERENA.



# A word about the beginning of CERENA's newsletter by Henrique Matos

20 YEAR EDITION



These rounds of fusions lead to CERENA with the multidisciplinary that we know today. However, in 2014, the center did not yet have a cohesive vision or a graphical identity. That was the problem Henrique tackled with Maria João Pereira and Amélia Dionísio as part of the first Executive Committee of CERENA. This was the beginning of the communication tools we know today: CERENA's website, newsletter, and flyers.

Henrique was the editor of CERENA's first newsletters, an initiative people embraced with pleasure, as there was a lack of information on what their peers were doing. In Henrique's words, those who enter CERENA today find a **much more communicative center**, which is an asset for problem-solving and improving project collaborations. When looking into the future, Henrique believes the next big step for CERENA is to have a **stronger image for stakeholders outside of the Técnico community**, while **promoting initiatives to foster collaboration between students**, for instance, by doing informal talks about their research projects.



# Community news

## Maria de Lurdes Dinis participates in Waste Management Symposia



Maria de Lurdes Dinis participated in Waste Management Symposia, which took place in Phoenix, Arizona, from **8 to 12<sup>th</sup> March 2026**. Maria de Lurdes participated as an **invited speaker** in the Environmental Remediation panel and did an **oral communication** in the Environmental Remediation of Abandoned Uranium Mines and Mills session.

## Open Day Masters FEUP

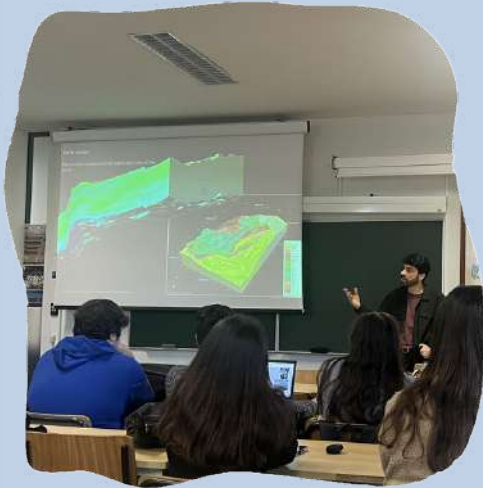
On **18<sup>th</sup> March 2026**, Maria de Lurdes Dinis, Beatriz Bento, and Kamila Amancio participated in FEUP's Open Day for master's students. They presented the Master's in Mining and Geo-environment Engineering to prospective students. Congratulations!





# Community news

## CERENA's researchers participate in FCT Conference



On **12<sup>th</sup> March 2026**, CERENA researchers Leonardo Azevedo, Manuel Pereira and João Narciso participated in the conference *"From Soil to Solar: Energetic Resources in Portugal"*, which took place at FCT - Faculty of Sciences and Technology of University Nova de Lisboa.

In this conference, Leonardo presented CERENA to the students, after which focused on his work using **deep learning generative models for subsurface earth modeling**. Manuel highlighted the **importance of energetic resources for the energy transition** and João finalized with the **technological advances in geophysics** and how they can contribute to the discovery of the energetic resources of the future.

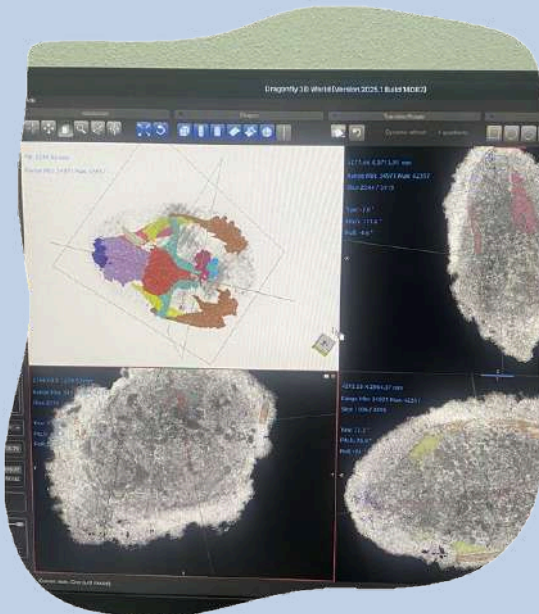


This conference fully reflects the importance of collaboration between institutions!



## Zeca Macuacua does part of his PhD at CERENA

**Zeca Macuacua**, a final-year PhD student from Universidade Federal Paraná, was in Lisbon for six months to do part of his sandwich PhD. Sandwich PhD are a common practice in Brazil, where the middle portion of the PhD is done abroad. For Zeca, that came with the opportunity to visit his co-supervisor's lab, **Ricardo Araújo**, at Técnico. Zeca first met Ricardo when working in Mozambique as part of the **PaleoMoz** project.



When Zeca arrived in Lisbon, all the materials needed for his work to proceed were in place. This was, in Zeca's words, **key to achieving good results in such a short period of time**. Zeca prepared fossil samples for segmentation, studied the anatomy of specimens, and performed CT scans. This work ended up giving rise to two papers, one which is close to publication and the other that Zeca is writing now that he's back in Brazil. **This exchange experience surpassed Zeca's expectations**. Congratulations for the amazing work!



# Community news

## CERENA researchers participate in 90 seconds of Science



This month, Abeer Mohtar and Ricardo Araújo were interviewed for the Portuguese podcast "90 segundos de Ciência", where they explained their research projects in 90 seconds. The episodes will air later this year. Stay tuned!

## CERENA receives a group of high school students from Greece

On **23<sup>rd</sup> March 2026**, CERENA received a group of 14 high school students from Greece. The students were welcomed by Leonardo Azevedo, who presented CERENA's research, and Maria João Pereira, who presented the Department of Engineering of Mineral Resources and Energy (DER). The students visited the Geosciences Museum, the Multiscale Imaging Laboratory, and the Geosciences Laboratory.





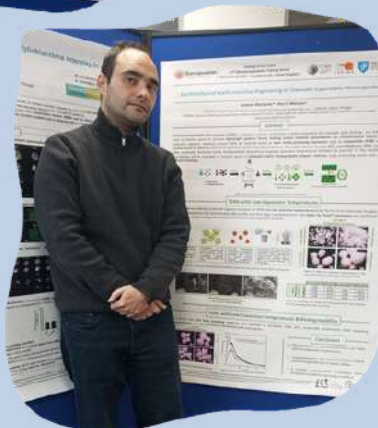
## CERENA researchers awarded grants in Talent Pass Trainings

### Talent Pass

Talent Pass Training results are available and, based on the evaluation scores and decisions, the Steering Committee prepared a final recommendation list for both online and on-site trainings.

Telma Henriques was selected to attend the Project Management training in Padua. In addition, António Aguiar, Tânia Frade, Abeer Mohtar, João Bordado, Joana Barrelas and Beatriz Barrocas will participate in online trainings on Project Management and Digital Skills.

## PhD Students go to Microencapsulation Training School



This month, PhD students Lucas Marcelino and António Mariquito attended the 15<sup>th</sup> Microencapsulation Training School, organised by the Bioencapsulation Research Group (BRG) in collaboration with Loughborough University. This was a great opportunity to learn, connect, and grow. **Congratulations to Lucas for winning the Best Poster Award!**



# Community news

## CERENA researchers participate in Técnico Campaign



This month, Rosana Pinto and Manuel Ribeiro recorded short videos for social media as part of Técnico's campaign for World Health Day. Rosana and Manuel explained their research project, which should be available on Técnico's Instagram during April.



## CERENA attends Ciência Viva 2026 Clubs Forum

CERENA attended the **Ciência Viva 2026 Clubs Forum**, held at CNEMA, Santarém, on **27<sup>th</sup> March**. The CERENA stand attracted the curiosity of participants (primary and secondary school teachers and students) with an activity on critical raw materials, in particular, rare earth element ores, as part of the REESource project (HE 101138460).





# Community news

## Science on the holidays

This year, as in previous years, CERENA and DER (Department of Mineral Resources and Energy Engineering) organized the eighth edition of **“Science on the holidays”** - an activity for high school students to get familiarized with Mining and Energy Resources Engineering during the Easter Holidays. This activity took place between **30<sup>th</sup> March 2026 and 2<sup>nd</sup> April 2026**.



This year, we have received **29 high school students from the Lisbon area**, between the 10<sup>th</sup> and 12<sup>th</sup> grades. The students started the day by being confronted with **what the world would look like in the absence of mineral resources**. During the first day, the students got familiarized with geological maps, an important tool for the visit they did on the second day to Secil. Additionally, they did a peddy paper around the Alameda Campus, and received a visit from C5Lab. Engineer Miguel Monteiro demonstrated the **fabrication process of cement and highlighted projects focused on the decarbonization of the cement industry** and the search for more environmentally friendly solutions.





# Community news

## Science on the holidays

On the second day, the group visited Secil to **see firsthand how the production of cement and aggregates is made**. During the visit, the students collected stone samples that were used, on the third day, to **perform physical and mechanical tests**. Additionally, the students were visited by Associação Cluster Portugal Mineral Resources, with the activity “Bag of Mineral Applications” and Visa Consultores, who challenged the students to **rehabilitate an old mine/quarry, a hands-on activity that stimulated the creative minds of the future engineers**.



The week finished off with a day to summarize all the activities and data in a storytelling activity and the construction of equipment for the Mining Industry, an activity dynamized by Fravizel SA.





# Community news

## Week Engineering Profession at FEUP

Maria de Lurdes Dinis and Pedro Meixedo participated in the Week of the Engineering Profession at FEUP. This event, which took place from **24 to 26<sup>th</sup> March 2026**, allowed the presentation of the bachelor's degree in Mining and Geo-Environment Engineering using materials from three of CERENA's projects: RisBriefCase, ValorWaste and REESource.



## PhD Defenses



On **27<sup>th</sup> March 2026**, Sofia Fernandes defended her PhD, entitled *Engineering Solar Light Photocatalytic Systems for the degradation of emerging Pharmaceutical Pollutants in Wastewater*. Sofia was supervised by Ana Clara Marques, Luís Filipe Santos, and Markus Niederberger. **Congratulations Sofia!**

## Upcoming defenses

- **Roberta Lobarinhas**, 10 Abril 2026, Room 02.1 (-2 floor of the civil building), 14.30 - *Assessment of the vulnerability of natural stones to high temperatures*



# Pre Award



Researchers interested in applying to calls for competitive funding are requested to **complete the Expression of Interest (EoI) online form provided by CERENA Pre-Award Office**. The submission of the EoI enables the Pre-Award Office to anticipate upcoming applications, ensure adequate planning, and activate the necessary support actions.

**The collected data supports mandatory annual reporting and informs the distribution of the CERENA annual funds.**

## Applications for funding



The end of March was marked by the submission of **26 applications to R&D Projects**, including National (FCT) and International (Horizon Europe) calls. These submissions have the potential to secure over €2 million in funding for CERENA.

## Disseminations

### EUROPEAN | EC

#### MSCA Postdoctoral Fellowships 2026

DEADLINE **09.09**

**Deadline:** September 9, 2026, 16h00 (Lisbon time)

**Funding:** € 399.05 million (overall indicative budget)

**Duration:** up to a maximum of 24 months

**Links:** [EU Funding & Tenders Portal - HORIZON-MSCA-2026-PF-01-01](#)

#### Main eligibility conditions

Applicants must:

- be postdoctoral researchers at the date of the call deadline - hold a doctoral degree or have successfully defended their doctoral thesis (successful defence must be unconditional and supporting documentation may be requested);
- have a maximum of 8 years full-time equivalent experience in research, from the date of award of the doctoral degree (extensions/exceptions may apply);
- comply with the mobility rule - not have resided or carried out their main activity (e.g. work, studies) in the country of the beneficiary/host organisation for more than 12 months in the 36 months immediately before the call deadline.

**Note:** Researchers who, at the date of the call deadline have refugee status under the Geneva Convention, or benefit from the EU temporary protection are exempt from the mobility rule.

**Detailed eligibility conditions**, as well as **additional information** on the MSCA-PF call, can be found in official sources provided by the European Commission, such as the call description on the [EU Funding & Tenders Portal](#) and the [Horizon Europe Work programme 2026-2027](#).



# Inside our labs

## Workshop on Image Segmentation

This month, on **13<sup>th</sup> March 2026**, we held our second CERENA workshop, focusing on **Applied Image Segmentation Tools for Scientific Visualization**. The session included an introduction to **Dragonfly**, a powerful software that offers a wide range of functionalities and is freely available for academic use.



## The Axioscan 7 Geo is fully operational and ready for use



The system supports multiple imaging modalities, including brightfield, polarized light, and fluorescence, making it suitable for a wide range of applications such as geology, materials science, and life sciences.

The equipment is located at MIL and is now available to support your research activities.

For more information, contact **Sílvia Carvalho**.

# Latest in the press

1. Machado, M.; Firmo, J.P.; Garrido, M.; Bordado, J.C.; Correia, J.R.; **Hygrothermal durability of the bond between externally bonded bio-based CFRP strips and concrete**, Journal of Adhesion, 1 January 2026
2. Casquilho, M.; Galhano, R.; de Miranda, J.L.; Pacheco, P.; Paulo, I.C.; Bordado, J.; **Fitting a System of ODEs to Data in Python: Select the 'Function' and Run on the Web. From 'Curve\_fit' to 'Minimize'**, Lecture Notes in Networks and Systems, Volume 1746, Pages 3-14, 1 January 2026
3. Neves, D.; Morgado, T.; Alves, J.; Pereira, M.; Pereira, M.; **Influence of SLM Processing Parameters on Intrinsic Defects and Mechanical Properties, Procedia Structural Integrity**, Volume 79, Pages 266-274, 1 January 2026
4. Gómez-Pazo, A.; Pérez-Alberti, A.; García-Hernández, C.; De Pablo, M.Á.; Oliva, M.; Goyanes, G.; Ruiz-Fernández, J.; **Processes and landforms on the rocky coast of Livingston Island (South Shetland Islands, Maritime Antarctica)**, Antarctic Science, 1 January 2026
5. Bordonhos, M.; Pinto, R.V.; Frade, T.; Chen, B.; Nouar, F.; Mouchaham, G.; Gomes, J.R.B.; Serre, C.; Pinto, M.L.; **Towards sustainable biogas upgrading: MIL-120(Al) as a cost-effective water stable MOF for CO<sub>2</sub>/CH<sub>4</sub> separation**, Journal of Materials Chemistry A, 1 January 2026
6. Alves, J.; Morgado, T.; Pereira, M.; Pereira, A.; Martins, R.F.; **A Novel Optimisation-Based Approach to Predict the S-N curves Behaviour based on Small Crack Growth in Additively Manufactured Ti-6Al-4V**, **Procedia Structural Integrity**, Volume 79, Pages 326-334, 1 January 2026
7. Alves, J.L.D.O.; Costa, J.F.C.L.; Soares, A.; **Uncertainty Assessment by Using Geostatistical Seismic Multimodal Inversion**, Mathematical Geosciences, Volume 58, Issue 1, Pages 257-276, 1 January 2026
8. Macungo, Z.; Araújo, R.; Rubidge, B.S.; Day, M.O.; Dollman, K.N.; Benoit, J.; **Evolutionary radiation of large-bodied gorgonopsians from the lower Abrahamskraal formation of South Africa**, Anatomical Record, 1 January 2026
9. Lopez, L.J.; Morales-Ospino, R.; Pinto, R.V.; Castro-Gutierrez, J.; Mouchaham, G.; Celzard, A.; Serre, C.; Fierro, V.; **Tailored hybridization of MIL-101(Cr) with graphene oxide enables enhanced hydrogen storage and delivery**, Journal of Materials Chemistry A, Volume 14, Issue 5, Pages 3101-3115, 20 January 2026
10. Morandeira, L.; Sanromán, A.; Freitas, A.A.D.; Canongia Lopes, J.N.; Shimizu, K.; **Understanding and optimizing the structure of novel peptide-based ionic liquids: Water as modulating agent**, **Journal of Chemical Physics**, Volume 164, Issue 3, Article 34501, 21 January 2026
11. Besua, C.E.; Paneiro, G.; Matias, H.; **Experimental Assessment of CO<sub>2</sub>-Water Relative Permeability in the Tight Brenha Limestone Formation, Lusitanian Basin**, Portugal; Greenhouse Gases: Science and Technology, Volume 16, Issue 1, Pages 90-99, 1 February 2026

# Latest in the press

12. Taborda, T.M.; Pires, J.C.M.; Badenes, S.M.; Lemos, F.; **Modeling closed outdoor cultivation of photoautotrophic microalgae growth rate: a critical review**, Journal of Applied Phycology, Volume 38, Issue 1, Pages 1–28, 1 February 2026
13. Prectl, M.H.G.; Alegria, E.C.B.A.; Belchior Rocha, H.; Justino, E.; Gomes, J.F.; Puna, J.F.; **Boundaries for a global resilient energy transition**, Green Chemistry, Volume 28, Issue 6, Pages 2684–2693, 9 February 2026
14. Amancio Frutuoso, F.K.; Porfiro Sales Gonçalves da Silva, V.E.; de Freitas Bueno, R.; Bezerra dos Santos, A.; **Correlational factors associated with extracellular biopolymer formation in aerobic granular sludge**, Journal of Environmental Chemical Engineering, Volume 14, Issue 1, Article 120848, 1 February 2026
15. Lobarinhas, R.; Paneiro, G.; Dionísio, A.; **A new perspective on hydric dynamics and damage susceptibility in natural stones: Insights from the thermal impact on carbonate lithologies**, Bulletin of Engineering Geology and the Environment, Volume 85, Issue 3, Article 164, 1 March 2026
16. Fortunato, J.; Narciso, D.A.C.; Matos, H.A.; **Toward the Decarbonization of Ammonia Production through the Gradual Incorporation of Green Hydrogen**, Industrial and Engineering Chemistry Research, Volume 65, Issue 9, Pages 5035–5045, 11 March 2026
17. Mertin, K.S.; Mohtar, A.; Bordonhos, M.; Pinto, M. L.; May, T.; Herrmann, R.; Stock, N.; **CAU-10-H: Synthesis Scale-Up at the Pilot Scale, Techno-Economic Analysis, and Application in a Full-Scale Cooling System**, Materials and Interfaces, 26 March 2026
18. Benoit, J.; Araujo, R.; Lund, E.S.; Bolton, A.; Lafferty, T.; Macungo, Z.; Fernandez, V.; **Early synapsids neurosensory diversity revealed by CT and synchrotron scanning**, Anatomical Record, Volume 309, Issue 4, Pages 912–9291, 1 April 2026
19. Lobarinhas, R.; Paneiro, G.; Dionísio, A.; Ribeiro, M.; Cardell, C.; **Impact of thermal exposure on the surface properties of carbonate stones masonry**; Bulletin of Engineering Geology and the Environment, Volume 85, Issue 1, Article 22, 1 April 2026
20. Nunes, A.N.; Lourenço, L.; Castro Meira, A.C.; **Wildfire causes in mainland Portugal: Municipal-scale hotspots and non-stationary spatial drivers**, Journal of Environmental Management, Volume 404, Article 129315, 15 April 2026
21. Attaei, M.; Valencia, J.; Condeço, J.; Nogueira, R.; Bogas, J.A.; **On the effect of monoethanolamine and N-methyldiethanolamine on the carbonation rate and mechanical properties of cementitious materials**, Construction and Building Materials, Volume 520, Article 145973, 18 April 2026
22. Castro Oliveira, M.; Delpech, B.; Alhajri, A.; Jouhara, H.; Montorsi, L.; Filipe, R.M.; Matos, H.A.; **Dynamic programming model for a thermal energy storage-based heat recovery system in a process industry plant**, **Thermal Science and Engineering Progress**, Volume 73, Article 104631, 1 May 2026



# Upcoming

10/04

**PhD Defense Roberta Lobarinhas**

Lisbon, Técnico Room 02.1 (-2 floor of the civil building)

14-16/04

**Paste Conference**

InterContinental, Lisbon

18/04

**Instituto Superior Técnico Open Day**

Lisbon, Técnico Lisboa

28-30/04

**Talent Pass Consortium Meeting**

30/04

**CERENA Seminar hosted by Professor Rui Sousa**

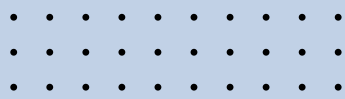
IST C13 | FEUP F405

14&15/05

**CERENA Annual Meeting**

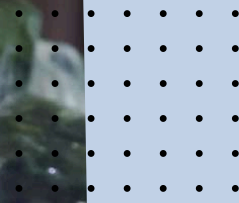
Foz do Arelho

Do you want to share anything with the community in the next newsletter? Fill in the communication form at [CERENA's website](#).

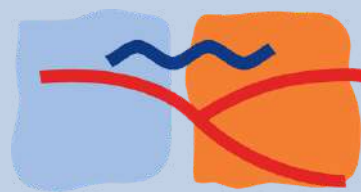


20 YEAR  
EDITION  
#4

APRIL 2026

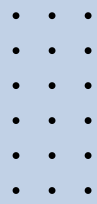


Thank you for reading! Stay tuned for more updates in our next newsletter.



**CERENA**

Centro de Recursos  
Naturais e Ambiente



CERENA is financially supported by FCT - Foundation for Science and Technology under the project UID/04028/2025.