



CERENA

Centro de Recursos
Naturais e Ambiente

CERENA SEMINARS
2025 / 2026

20th CERENA's Anniversary

From Academy to Industry: Exploring Scientific Frontiers

WWW.CERENA.PT

September 25th, 2025

13:00

Room C13 - IST

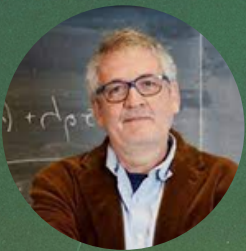
Room F405 - FEUP

The Modern Mining Engineering Transformations (I)

The concept of digital mining innovation lies at the heart of the transformation of modern Mining Engineering. Digital innovation in mining involves the adoption of Industry 4.0 technologies—such as artificial intelligence (AI) and data analytics—to optimize production, improve safety, and enhance sustainability across the mining value chain.

This presentation highlights two key areas of digital innovation:

- i) The application of spatial data science methods and technologies for mineral resource prediction, and the integration of risk into production scheduling through stochastic mine planning. Professor Amílcar Soares.
- ii) Digitization in underground mining operations to increase safety and optimize production and / or productivity leading to improved economics in a globally competitive industry, including a discussion about communications options, automation, and the Internet of Things (IoT). Engº António Salvador.



Amílcar Soares is a Full Professor at the Instituto Superior Técnico (University of Lisbon) and a Visiting Professor at several other institutions in the UAE, Australia, and Brazil. He was a Distinguished Lecturer for the International Association of Mathematical Geosciences. His core research and development work centers on geostatistics and spatial data science methods applied to environmental, mineral, and energy resource assessments. In the environmental and health domains, his recent projects have focused on extreme drought risk characterization and COVID-19 risk assessment. In the energy sector, his latest work involves geostatistical seismic inversion for geomechanical characterization and risk assessment of subsurface targets of CO₂ sequestration. He has coordinated numerous international research projects in mineral resource assessment, with recent efforts emphasizing critical raw material resource evaluation.



António Salvador is a seasoned mining executive with over three decades of international experience spanning four continents. As Managing Director of SOMINCOR SA, he led Europe's largest zinc mine and sixth largest copper mine—Neves-Corvo—through transformative growth, overseeing a workforce of 2,600 and managing capital projects exceeding €500 million. His strategic leadership not only elevated production but also strengthened the mine's role in Portugal's economy, engaging with stakeholders from local communities to EU-level institutions.

Antonio's career is defined by his ability to bridge technical expertise with operational excellence. From his early days in rock mechanics in South Africa and Canada to senior roles in Brazil, the UK, and Portugal, he has consistently driven innovation and performance. His tenure as Director of Operational Technology at Lundin Mining Corporation saw the rollout of cutting-edge automation and digital infrastructure across global assets, including private LTE networks and advanced process control systems.

He holds a BAsC in Geological Engineering from the Department of Civil Engineering at the University of Toronto and is a Chartered Engineer with multiple professional affiliations, including IOM3 (UK), AusIMM (Australia), and the Chamber of Mines (South Africa).

Applied Research and Development in Textile Industry: a traditional tool operating in an unfamiliar framework

October 30th, 2025

12:30

Room C13 - IST

Room F405 - FEUP

Industrial processes and products go typically through cycles of expansion – profit – decline and finally end of life.

Innovation has allowed industrial activities to extend their lives by creating more cycles. This mechanism has worked well when the following "generally" apply: consumers recognize and value quality, intellectual property is respected and actors abide by the rules: labor laws, fair taxes, safety and environmental regulations, etc. These were valid within certain geographical and political contexts, but the much-heralded globalization made the above principles inoperative and instead turned into subject of mockery, as we see every day in the highest international instances.

Fisipe/SGL was the last producer of acrylic fiber in Western Europe to shut down: at least a few things were done the right way. For several decades, the drive for innovation kept the company running when the decline in the sector was evident.

But even considering that R&D alone is not enough, without it, it's not even worth trying. This is a truth that will hold, no matter what.



Ana C. Marques is an Associate Professor in the Department of Chemical Engineering at Instituto Superior Técnico and a full member of the Center for Natural Resources and Environment (CERENA). She established the Technological Platform for Microencapsulation and Immobilization (TPMI) at IST, which is currently her main research focus, along with the development of sustainable and biodegradable polymers. As part of a Pedagogical Innovation Project, she also implemented the Hands-on Polymers Laboratory. She holds approximately 15 international patents and has co-authored over 90 publications. She is currently the Principal Investigator of 5 research projects, co-supervisor of 12 PhD students (3 of whom have already completed their degrees), and supervisor of 4 postdoctoral researchers. She has been recognized for Excellence in Teaching in recent years and currently serves on the Executive Committee of the Department of Chemical Engineering as the member responsible for International Affairs (Mobility Coordinator). From 2007 to 2011, she was a researcher at Dow Corning SA (Belgium), and during a sabbatical, she joined Prof. Markus Niederberger's group in the Department of Materials at ETH Zürich (Switzerland) from April to July 2019.



Rui Dias graduated in Chemical Engineering (IST, 1991) and earned a PhD in Organic Chemistry (IST, 1996), followed by postdoctoral research at the Technological and Nuclear Institute. In 1999, he joined Fisipe as a process engineer in the R&D team, where he led the development of innovative fibers and processes until the company's closure in August 2025. Key projects include: modified cross-section fiber for fake fur (2001), gel-dyeing of acrylic fiber (2002), Panox precursor fiber (2009), carbon fiber precursor (2015), and pigmented fiber for outdoor fabrics (2009). These products significantly expanded Fisipe's market reach and profitability. Rui maintained strong ties with Portuguese universities, supervising master's theses and integrating students into industrial projects, many of whom later pursued careers in the chemical industry. His work was instrumental in sustaining the company through challenging market conditions.

November 27th, 2025

12:30

Room C13 - IST

Room F405 - FEUP

Process Heat Integration in Industry

Increasing energy efficiency in industry requires sectoral and cross-cutting technological developments, as well as measures to regulate energy consumption and greenhouse gas emissions. It can be said that energy efficiency is the only source of clean energy, as it eliminates the need for other types and is available in any country, including those with limited natural energy resources.

Among the cross-cutting measures to increase energy efficiency with application in different industrial sectors, Process Heat Integration stands out. The main objective of heat utilization through the Process Integration methodology is to make the best possible use of the excess heat potential of process areas that have excess heat at temperatures higher than that required by process areas with a heat deficit. In this seminar, we will address two case studies in the Portuguese industrial reality: energy integration in the companies 'Anilina de Portugal, SA' and 'Renoeste'. In the first case, the production of aniline and mononitrobenzene took place, and in the second, the production of salt from brine obtained in the construction of caves for natural gas storage.



Henrique Matos is Full Professor at Instituto Superior Técnico (IST), where he graduated in Chemical Engineering, in 1986, having joined the teaching activity at IST in the same year. In April 1993, he completed his PhD in Chemical Engineering at IST. In March 2010, he obtained unanimously the habilitation at IST / UTL. In scientific terms, his interests are in the field of Process Systems Engineering and Supercritical Fluids Technology. He developed work in Process Integration, Process Dynamic Simulation and Sustainability Analysis of Process. His research work has resulted in 217 publications in scientific articles published in international journals, international conference papers in national journals, articles in Proceedings of national conferences, etc. He participated in several Scientific and/or Technological Development projects, supported by Public Institutions or by industrial companies. He is currently the President of the Department of Chemical Engineering (DEQ) at IST.



Mário Jorge Pinho graduated in Industrial Chemistry Engineering (FEUP, 1971) and has developed a solid and progressive career in the chemical and industrial sector. Since 1978, he has worked with the CUF industrial group, currently known as Bondalti. He began as a Process Engineer, joining the team responsible for revamping the Ammonia Synthesis and Gasification Unit, and later became Plant Manager in the same area.

Later, he took on technological support and programme coordination roles in the Organic Chemistry Division, gaining experience in process optimisation and control. Subsequently, he was responsible for planning and control at the Estarreja Fertiliser Manufacturing Unit. He served as Manager of the Adiabatic Nitration Project and then as Industrial Director of Anilina de Portugal, accumulating responsibilities in administrative, financial and human resources management. Over time, he took on management and technical direction positions in leading companies, including Quimigal, Uniteca, Quimigest, Renoeste and Asiquim. Between 2015 and 2022, he ended his active career as Senior Consultant at Pool CUF, currently Bondalti, consolidating a trajectory of technical and strategic leadership marked by his dedication to the Portuguese chemical industry.

December 18th, 2025

12:30

Room C13 - IST

Room F405 - FEUP

Applied research, the golden triangle: research, funding and industrial partnership

Applied research is a key area in most research institutions, mainly the ones dealing with science and engineering. In this type of research the wealthy link between researchers, industrial partners but also funding institutions is paramount for the success of projects.

In this seminar we propose CERENA's researchers participate in an open talk with representatives of a funding institution (Sociedade Ponto Verde, SPV) and an industrial partner (Valorsul) of some projects that ran in CERENA.

The (different?) perspectives will be discussed, some past experiences will be presented. Some questions can be posed and maybe differently answered depending on the type of institution: what is a "successful project"? Do we have the same language when discussing the objectives, the schedule, the organization, the results...? Is the dialogue always clear? Can conflicting interests happen? How to conquer an industrial partner for "an adventure" where most frequently the results are not guaranteed? Are there rules for a "wealthy" interaction? Are there any tips to increase projects funding probability? Is it possible to successfully put sometimes very young fellowships in an industrial operating environment with minor impacts?

In this seminar past experiences will be presented and we expect the active participation of attendees for a rewarding discussion.



Teresa Carvalho is a retired associate professor of Instituto Superior Técnico (IST). She graduated in Mining Engineering at IST in 1981 and worked for almost 10 years at Somincor in the Neves Corvo copper processing plant project and start up. Since 1989 she joined IST teaching courses mainly in the field of mineral and solid waste processing. She coordinated on different occasions the undergraduate and master programs in Mining and Geological Engineering. She was co-founder of CERENA and its president in 2013-2015. Her research activity was mainly done in the field of mineral processing and since 2001 also in the recovery of raw materials from solid waste. She participated in several international and national projects and coordinated 7 national projects. Most of these projects were in consortium with industrial partners, some including Tratolixo, and some of them were funded by SPV.



Susana Ângelo, with a solid academic foundation in Forest Engineering from the University of Trás-os-Montes e Alto Douro, complemented by a postgraduate degree in Sustainability Management from ISEG and an MBA from ISCTE, she has built a career dedicated to environmental innovation and strategic project management. Her professional journey began with an immersive experience at the Lisbon International Exhibition in 1998 (EXPO 98), themed "The Oceans: A Heritage for the Future," which sparked her passion for sustainability. She then joined AIMMP — the Portuguese Association of Wood and Furniture Industries — where she contributed to initiatives in Waste Management, Sustainable Forest Management, Phytosanitary Control, and Forest Planning. Since 2005, she has been part of Sociedade Ponto Verde, managing strategic projects within the Compliance and Innovation department. Her responsibilities include overseeing Research & Development initiatives and managing the Integrated Quality and Environmental Management System. An experienced Project Manager, she combines technical expertise with a strong commitment to environmental awareness, waste management, sustainable development, and corporate social responsibility.



Diana Tomázio is an experienced engineering and innovation leader with more than 15 years of work in technology development, innovation project management, and strategic transformation across the environmental and biotech sectors. She currently serves as Head of Innovation at Valorsul, one of Portugal's leading companies in municipal waste treatment and recovery. Before joining Valorsul in 2019, Diana spent eleven years at A4F – Algae for Future, a biotechnology company specialising in DBOT industrial microalgae production systems, where she served as Head of Engineering. Diana holds a degree in Chemical Engineering from FEUP. Her experience includes leadership in technology scale-up and prototype development, participation in several EU-funded research and demonstration projects, and the dissemination of technical and scientific advances through publications and invited talks at international forums. She has also supervised multiple master's students.

The challenges of carbon dioxide abatement in the cement and concrete industry

January 29th, 2026

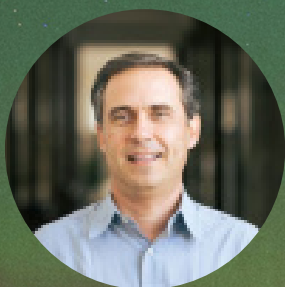
12:30

Room C13 - IST

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The production of clinker, the main active ingredient of cement, is carried out by firing limestone and other minerals at very high temperatures, leading to decarbonation reactions with the emission of CO₂. The cement industry, the second-largest industrial CO₂ emitter, produces about 7% of global CO₂ emissions. The cement industry emission is also the main contributing factor to the environmental footprint of the construction sector. Yet, to achieve most of the sustainable development goals (SDGs), the construction sector needs to increase the construction rate to build the required infrastructures to achieve the SDGs targets on time. The challenge to equilibrate the increasing cement demand and the abatement of the CO₂ emissions requires setting up a series of concerted strategies for the cement industry sector.

We will present the research carried out at SECIL and CERENA to address this challenge. Among the possible strategies, the carbon capture using adsorption technologies is gaining considerable attention. Together with SECIL, we have been assessing the implementation of adsorbents based on natural clays in cement plants. Another complementary strategy has been the implementation of alternative fuels to replace fossil fuels in the kiln.



Moisés Luzia Pinto (b. 1976) obtained the Ph.D. in Chemistry (Physical Chemistry), at the end of 2005, at the University of Lisbon. Developed Post-doctoral research at the Center of Chemistry and Biochemistry of the Faculty of Sciences of the University of Lisbon and at the Centre for Research in Ceramics and Composite Materials of the University of Aveiro. MLP works in the field of adsorbent materials, namely in the synthesis and characterization of adsorbent materials and composite adsorbent/polymer materials, and in gas and VOC mixture separations. More recently, he is developing research in the field of nanoporous materials obtained from clays and hybrid organic/inorganic materials, for purification, storage and controlled release of gases.



Ângela Serra Nunes is the Head of CIND (Innovation and Product Development Center) at Secil S. A – Companhia Geral de Cal e Cimento. She holds a degree in Civil Engineering from Instituto Superior Técnico, with a specialization in Structural Design. Throughout her career, she has been involved in the development of low-carbon concrete, managing the Concrete Laboratory of Secil Group from 1990 to 2007. Since 2007, she has been head of CIND, providing technical support for Secil Group Companies and Clients in Secil's areas of expertise (Cement, Concrete, Mortars, and Precast). She was distinguished with the Maria de Lourdes Pintasilgo Award in 2018.

Road to 2050 – Roadmap for the Decarbonization of the Natural Stone Sector

February 26th, 2026

12:30

Room C13 - IST

Room F405 - FEUP

ASSIMAGRA leads the Road to 2050 – Roadmap for the Decarbonization of the Natural Stone Sector, the only national plan specifically dedicated to this sector, with the aim of guiding the path towards carbon neutrality. In recent years, the natural stone sector has achieved significant progress, both in terms of innovation in its applications and in strengthening its international positioning in high value-added projects. Despite this progress, significant challenges remain, particularly those related to climate change and high contextual costs, such as those arising from the energy crisis, which affect the competitiveness of companies. In this context, it is essential to increase energy efficiency and adopt more innovative and sustainable business models. The decarbonization of the sector, covering both extraction and processing phases, plays a central role in this strategy, promoting emission reductions throughout the entire production cycle. It is essential to promote a technological and managerial paradigm shift in order to empower companies to actively contribute to a carbon-neutral economy.



Maria João Pereira is a Full Professor at the Instituto Superior Técnico (IST) of the University of Lisbon (ULisboa). Her research interests have been mainly focused on the application of Geostatistics to the earth and environmental sciences, developing spatial tools to better understand the impacts of anthropogenic activities and natural hazards on environment and public health. She was a founding member of the Center for Natural Resources and Environment (CERENA) and its president between 2012 and 2021. She coordinated and participated in more than 30 scientific projects and has more than 120 articles published in scientific journals and communications in scientific conferences.

From April 5, 2024 until February 2025, Maria João Pereira served as Secretary of State for Energy in the XXIV Constitutional Government of Portugal. She has since returned to Instituto Superior Técnico, where she resumed her academic duties and assumed the role of Head of the Department of Mineral and Energy Resources Engineering.



Célia Marques is Executive Vice-President of ASSIMAGRA – Portuguese Association of the Mineral Resources Industry, where she has played a central role in the strategic development of the natural stone industry in Portugal. She holds a degree in Environmental Engineering and has focused her career on internationalization, innovation, and sustainability within the sector. Throughout her trajectory, she has led and supported major initiatives promoting Portuguese stone in international markets, as well as projects aimed at the decarbonization and sustainable transition of the extractive industry. A strong advocate of an integrated approach that balances economic competitiveness with environmental responsibility, she has been an active voice in shaping the future of Portugal's mineral resources sector.

[In]Temporal Stone: Heritage, Nature, and Sustainability

March 26th, 2026

12:30

Room C13 - IST

Room F405 - FEUP

Stone heritage embodies both deep geological time and human history, acting as a bridge between natural processes and cultural expression. This seminar explores how stone materials record environmental conditions, construction practices, and long-term interactions between monuments and their surroundings. Drawing on geoscientific and conservation perspectives, the discussion will address the mechanisms that drive stone decay, the environmental information preserved within stone materials, and the role of scientific analysis in supporting sustainable conservation strategies.

The seminar will take the form of a round table bringing together complementary perspectives: a conservation professional working across both natural and built heritage, and a representative from a public institution responsible for natural heritage management. Both guests have collaborated with our team on several case studies over the years, enabling a dialogue grounded in shared experience. Through this exchange, the session aims to reflect on how integrated approaches to stone as both natural resource and cultural asset can contribute to more resilient heritage practices in the context of a changing climate.



Amélia Dionísio is Associate Professor at Instituto Superior Técnico. Her research activity is mainly focused on stone cultural heritage and also promotion of knowledge and sustainable economic value for natural stone. Her research focuses on the chemical, mineralogical, and environmental processes that affect stone in natural monuments, archaeological contexts, and historic architecture. Combining fieldwork and laboratory analysis, she investigates material decay, and long-term preservation strategies. She has participated in interdisciplinary national and international projects and regularly contributes to teaching and supervision in heritage science. Their current research addresses sustainable approaches to the conservation of stone heritage and the environmental information recorded in building materials.



Lia Mergulhão is Geological Engineer, holding a BSc from the NOVA School of Science and Technology, a Master's degree in Geological Heritage and Geoconservation from the University of Minho, and is currently in the first year of a PhD Program in Environmental Education at the University of Seville (Spain). She works as a Senior Technical Officer at the Instituto da Conservação da Natureza e das Florestas (ICNF), within the Classified Areas Division of the Lisbon and Tagus Valley Regional Directorate for Nature Conservation and Forests. She contributes to technical and research teams in geological heritage management and geoconservation, and develops outreach and interpretation activities on the natural heritage of protected areas for audiences ranging from students to the general public.



Teresa Silveira was born in Covilhã, but it was in Tomar that she pursued her academic career, at IPT. She completed her bachelor's degree in conservation and restoration in 1993 and later, also at the same school, complemented her studies with a specialized higher education course in Art. In her more than 30 years of professional experience as a conservator-restorer, she founded 2 conservation and restoration companies, Regra de Ouro in 1994 and Ca CO3 in 2000, remaining in the latter for 22 years as manager and technical coordinator of the company's interventions, mainly in the area of stone and similar materials. In 2022, she retired from the corporate world, dedicating herself since then to heritage consulting, training, projects and supervision. In 2025, she accepted the challenge of coordinating the conservation and restoration work on the Belém Tower, within the scope of the PRR.

Converging Paths: Academia–Industry Synergies in Critical Raw Material Recovery

April 30th, 2026

12:30

Room C13 - IST

Room F405 - FEUP

This talk brings together two professional journeys that have evolved in opposite directions but now converge on a shared goal: advancing the recovery of critical raw materials. One speaker began in academia and later moved into industry, where he applies advanced scientific knowledge to the development and optimization of industrial processes. The other started in industry and has more recently become involved with academia, contributing practical experience and operational insight to research projects. Through these complementary perspectives, the session will explore how bidirectional collaboration between science and industry can accelerate innovation, improve processes, and address the strategic challenges associated with critical raw materials.



Rui Sousa, holds a PhD in Mining and Geo-Resources from the Faculty of Engineering of the University of Porto, completed in 2020. His doctoral research focused on Mineral Processing, with the objective of studying the efficiency of mineral separations using image-analysis-based methodologies. Over the past ten years, he has also been involved in several R&D projects within this field.

Before moving fully into the industrial environment, he worked at SONAE and INOVA+ as an innovation manager. Since 2017, he has also been a Guest Lecturer in the Department of Mining Engineering at the Faculty of Engineering of the University of Porto. He is currently Production Director at B.AGAIN, a company of the dst group, where he is dedicated to developing processes for the recovery of critical metals from end-of-life lithium-ion batteries



Nuno Faria has always been connected to the extractive industry and construction. He has been working at dstgroup since August 2016 as a Project Manager, and currently as Business Development in Aggregates Production.

In the Gouvães Quarry project, he was the technical manager.

This project has been recognised with the 'European Award for Operational Best Practices' at UEPG's 'SDA 2022' and Word Top 5 in the World Demolition Awards 2024 (CATEGORY: RECYCLING & ENVIRONMENTAL DEMOLITION).

At Aurélio Sobreiro S.A., he managed projects in the extractive industry and public works, which allowed him to grow professionally.

Nuno coordinated investment in the Riolitos Lda quarry and implemented a cost control system for companies in Mozambique.

With a degree in Mining and Geo-Environmental Engineering from FEUP and a post-graduate degree in Management from UM, Nuno is continuing his studies on FEUP's Doctoral Programme in Mining and Geo-Resources Engineering.

An integrated alkaline carbonate leaching process for producing APT (Ammonium Paratungstate) from Scheelite

May 28th, 2026
12:30
Room C13 - IST
Room F405 - FEUP

In mining and metallurgical industries, scheelite high-grade ores and concentrates are preferentially leached by sodium carbonate at high temperature and pressure. The production of ammonium paratungstate (APT) from these liquors is complex and involves several operations: elimination of co-extractable impurities, solvent extraction by ion association using a tertiary amine, solvent regeneration and crystallisation. The main issues in this process are the prior removal of co-extractable impurities and the inhibition of tungstic acid formation during solvent extraction. Integrated studies proposing a unified, flexible flowsheet that addresses these problems are scarce.

To overcome these setbacks, two different purification methods for the leaching solutions were tested. The procedure that proved more efficient, avoiding the formation of crud induced by the residual colloidal silica, is based on additions of magnesium and aluminium, whose amounts were optimised. However, solving this problem led to another unexpected issue: occasionally, a gel-like precipitate formed during extraction. It was verified that this product was tungstic acid. Research showed that its formation could be avoided by regulating the intensity of the amine sulphonation. It was verified that molar ratios of sulfuric acid to amine greater than 2 hinder the formation of tungstic acid, and that higher extraction efficiencies are obtained for ratios greater than 8.

APT crystals with grades in W higher than 60% were produced by slow cooling crystallisation with simultaneous evaporation. Chemical characterisation of the crystals was performed by Raman spectroscopy.



Professor Emeritus, Faculty of Engineering, University of Porto. Worked as Director of the Master's and Doctoral Programs in Environmental Engineering and also in Mining Engineering. Created the Geo-Resources Environment Research Center (CIGAR). Former coordinator of the FEUP division of the Center for Natural Resources and Environment (CERENA) and coordinator at the national level of the raw materials area. Former Senior technician at the now extinct Nuclear Energy Board and head of the Planning and Project Division of the National Uranium Company, E.P. Former research fellow of the U.S. Academy of Sciences and of the International Atomic Energy Agency. Visiting professor at the Technical University of Helsinki (now Alvar Aalto) and taught at universities in Finland, Spain, Slovakia, and Peru. He was responsible for large industrial projects, notably the Nisa project (uranium extraction and hydrometallurgy).

Coordinated more than two dozen research projects with national, European Community, and transcontinental funding. In the area of hydrometallurgy, research was developed on the hydrometallurgy of gold, scheelite and lithium ores (spodumene and lepidolite). Executed projects for several prominent institutions and companies, such as CCDRN, Petrogal, and REN, among others. He was a consultant in hydrometallurgy for the Australian company Berkeley Resources. Reviewed scientific articles for many international journals and congresses. Participated in the scientific committees of several international conferences. Evaluator of research projects of the National Innovation Agency. Evaluation of the career of international researchers in Argentina and Greece. It has published more than 100 articles in national and international journals and scientific books.

Scaling Intelligence: AI Solutions for the Natural Stone Industry

June 25th, 2026

12:30

Room C13 - IST

Room F405 - FEUP

This seminar addresses a question that the natural stone industry can no longer afford to ignore: how can cutting-edge technology be harnessed without losing what makes stone unique? The AIStone4.0 project, developed at CERENA under the Sustainable Stone by Portugal green agenda (PRR), tackles this challenge head-on by deploying an AI pipeline — including generative AI — to predict vein patterns in marble slabs straight from the raw quarry block, before any cutting takes place. The practical implications are significant: smarter cutting decisions, less wasted material, and a more sustainable use of a finite natural resource. Stonify, a Portuguese technology startup, takes this research further by embedding it within a broader commercial ecosystem of hardware and software tools designed to digitalise and trace stone blocks and slabs along the entire value chain — from quarry operators to architects and end buyers. What emerges from this seminar is not simply a showcase of two projects, but a working model of how university research and industry can genuinely build something together.



Gustavo André Paneiro is a tenure-track Assistant Professor at DER Técnico University of Lisbon, and a researcher at CERENA. Holding a PhD in Earth Resources from IST, his research focuses on experimental Rock Mechanics, encompassing non-standard geomechanical testing, acoustic emission monitoring, and the characterisation of natural stone raw materials — particularly Portuguese marbles, granites, and limestones — under extreme conditions of temperature and pressure. In recent years, he has been integrating Artificial Intelligence into rock and natural stone characterisation, developing neural network models for blast-induced vibration prediction and applying self-supervised Vision Transformers and Generative Adversarial Networks to the automated visual classification and texture synthesis of marble, opening new avenues for quality control in the natural stone industry. He coordinates the MIL – Multiscale Imaging Laboratory at CERENA/IST and is involved in the Sustainable Stone by Portugal RRP Green Agenda, with publications in leading international journals.



João Vital is the CEO and co-founder of Stonify. He has an MSc in Mechanical Engineering from IST, with a background in image processing and computer vision. In Stonify, he tackles the industry of natural stone, which is one of the least digitized heavy industries. To solve this issue, Stonify uses a connected set of applications, made specifically for natural stone, that turn shop floor operations into traceable, structured data across the production chain.

Environmental Remediation Projects in Portugal (Old Tailings Dam of Urgeiriça) and Worldwide (USA)

July 16th, 2026
12:30
Room C13 - IST
Room F405 - FEUP

Since 2001, EDM has been carrying out the environmental remediation of former mining areas in Portugal, under Decree-Law No. 198-A/2001, which defined the concession granted to the company. This concession, granted by the Portuguese State on an exclusive basis, covers 199 mining areas distributed throughout the national territory, representing one of the most extensive and complex environmental remediation programmes in Europe.

In 2006 — now 20 years ago — the first major environmental remediation project in a former uranium mine began in the iconic Urgeiriça Mining Area, once one of the most important uranium mining areas in Europe. This inaugural intervention focused on the Old Tailings Dam, marking a decisive step in the environmental recovery of a mining legacy of high historical, industrial and environmental relevance. This seminar will provide an in-depth overview of all the processes that led to and underpinned this pioneering remediation project, covering its design, execution, implementation and the respective technical and scientific foundations that continue to guide decisions in subsequent remediation projects.



Maria de Lurdes Dinis is a Professor at the Engineering Faculty of the University of Porto. She holds a PhD and an MSc in Environmental Engineering, as well as a degree in Mining Engineering, and has 27 years of experience addressing environmental issues related to radioactive contamination. She has 20 years of experience in engineering education, with a focus on the impact of environmental mining and environmental remediation. Her research activities have focused on the environmental impacts of uranium mining and the development of environmental remediation solutions. She has several years of experience in collaboration with NATO and the International Atomic Energy Agency.



Carlos Martins, graduated in Civil Engineering, has been working in the field of environmental remediation of former mining areas since 2010. He has begun his career as a consultant at EDM – Empresa de Desenvolvimento Mineiro, S.A., where he later took on the role of Coordinator of the Environmental Remediation Division and is currently Technical Director, responsible, among other things, for the management and supervision of environmental rehabilitation projects.



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