

DEUTSCHES **BERGBAU-MUSEUM** BOCHUM

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THE DEUTSCHES BERGBAU-MUSEUM BOCHUM

EXPERIENCE MINING ...

LEIBNIZ RESEARCH MUSEUM FOR GEO-RESOURCES

Founded in 1930, the Deutsches Bergbau-Museum Bochum – as the Leibniz Research Museum for Georesources – is tasked with collecting, preserving, investigating, exhibiting and teaching the material heritage of the mining industry.

This is a duty that we honour both above and below ground, whether it be here in Bochum, or regionally, nationally or even internationally. Our mission statement reads: To spread the knowledge and experience of mining. And we do all of this under one roof.

Our areas of research comprise archaeometallurgy, mining history, materials science, mining archaeology, alongside our Research Laboratory and the Montanhistorisches Dokumentationszentrum (the Mining History Document Centre, or montan.dok).

Through the four tours of our permanent exhibition – Hard Coal, Mining, Mineral Resources and Art – and with the visitor's mine, we relate the fascination of mining in all its various guises. www.bergbaumuseum.de/about-us

FACTS & FIGURES

Staff: 218

- Established: 1930
- Inclusion in the "Blue List" (precursor to the Leibniz Association) in 1977, since 2016 as the Leibniz-Research Museum for Geo-resources
- Funding body: DMT-Gesellschaft f
 ür Lehre und Bildung mbH, Stadt Bochum

GENDER EQUALITY

The Deutsches Bergbau-Museum Bochum is aware that the career paths of women and men, especially in science and academia, still vary widely, and that each are presented with different challenges. It is for this reason that the Deutsches Bergbau-Museum Bochum wants to create a family-friendly and equal opportunities-based institutional culture for everyone, and, in particular, to provide additional support to its female employees in the development of their careers. Further information: www.bergbaumuseum.de/gender-equality



... SPREAD KNOWLEDGE

OUR HISTORY

The Deutsches Bergbau-Museum Bochum, the Leibniz Research Museum for Geo-resources, was founded on 1 April 1930. From its modest beginnings as a "Historical Mining Museum", now with over 90 years of history behind it, it has grown to become the world's largest mining museum. And coal is not the only mined material explored here, for there's also salt, gold, silver, and copper as well as less common raw materials, such as lithium and molybdenum.

In the middle of the 19th century, mining was one of the most important economic sectors in Germany. In 1868, the Westfälische Berggewerkschaftskasse (WBK) in Bochum, the cooperative venture of the Ruhr mining industry, established a collection of "Mining tools" for teaching and exhibition purposes, to introduce young miners – not the general public – to mining technology and the nature of coal-bearing rock. Plans to found a public mining museum in Bochum were discussed, but were not implemented due to the difficult economic situation prevailing until 1927. Then, however, the city of Bochum and the WBK took the initiative, and Heinrich Winkelmann, a mining engineer who later became the museum's first director, devised a plan to convert the former abattoir site into a museum. So, the museum is not actually built on the foundations of a former mine, as many visitors assume. The first step was the founding of the museum on 1 April 1930 by the city of Bochum and the Westfälische Berggewerkschaftskasse. The museum was set up in the former cattle slaughterhouse, and was initially run by a director, a master model-maker, and a models custodian. It grew step by step.

After the end of the Second World War, the first tasks were to clean up and carry out repairs, before the first exhibition could be opened in 1946. The visitor's mine was reopened to the public in 1948. In 1947 the "Vereinigung der Freunde von Kunst und Kultur im Bergbau e. V." ("Association of friends of art and culture in mining") was founded. This organization still actively supports the museum, vigorously promoting a number of activities associated with mining.



Under the museum director Hans Günter Conrad, who took up his position in 1966, the historically oriented museum was expanded and reconfigured as a "research museum", i. e., a non-university research institution with both national and regional funding. In 1969,





the Bergbau-Archiv Bochum (Mining Archive Bochum) was founded. Its aim was to collect, conserve and index evidence of all kinds – written material, files and photos – from the entire German mining industry.

In 1973, the Bergbau-Museum acquired its emblem, the former double headframe taken from the decommissioned "Germania" mine. 71.4 m high and weighing 650 t, the headframe was based on plans drafted by the industrial architect Fritz Schupp. A lift was installed to connect the visitor's mine, the viewing platform and the museum. By saving the headframe, the Bergbau-Museum triggered a debate about whether technological industrial sites were worth preserving as historical monuments. Since then, the conservation of technological heritage sites has been one of the museum's research activities. To recognize its importance as a specialist technical museum within the national and international museum landscape, the Bergbau-Museum was renamed on 1 March 1976, becoming the "Deutsches Bergbau-Museum Bochum".

In 1977, the Deutsches Bergbau-Museum Bochum was recognized as a research museum by the Bund-Länder-Kommission (BLK), and included in the joint national and regional research funding programme. Since then, it has been one of the institutions on the "Blaue Liste" ("blue list"), now known as the Leibniz Association (Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz e. V., WGL). In 1979, the Deutsches Bergbau-Museum Bochum was admitted to the Ar-

In 2009, an architecturally modern extension, the DBM+, was opened to present special exhibitions in a contemporary manner. Since 2014, the Deutsches Bergbau-Museum Bochum has been undergoing a comprehensive structuring process within a project entitled "Master Plan DBM 2020". It comprised not just the restructuring of the organisation itself, but also a comprehensive reorganisation process and the conception of a new permanent exhibition. This entailed a huge logistical feat during which the Museum's Collections, Library | Photographic Library and the Bergbau-Archiv Bochum were completely removed and relocated. Some of the staff and exhibits were moved to interim sites. This was flanked by the design of a new permanent exhibition with four new tours presenting the range of areas explored by the Leibniz Research Museum for Geo-resources. At the end of 2018, the year that saw the end of hard coal production in Germany, the first section of the new permanent exhibition was completed: On 28

beitsgemeinschaft außeruniversitärer historischer Forschungseinrichtungen in der Bundesrepublik Deutschland (working group of non-university historical research institutions in the Federal Republic of Germany).

At the end of 2018, the year that saw the end of hard coal production in Germany, the first section of the new permanent exhibition was completed: On 28 November 2018, the first two tours "Hard Coal" and "Mining" were opened in the north wing. They convey the history of coal mining in Germany and the global relationships between man and mining across epochs and disciplines. In the summer of 2019, once the work ongoing in the south wing was finished, two new tours – "Mineral Resources" and "Art" – were opened, thus completing the new exhibition concept. The museum hosted a large-scale event celebrating the opening of the new permanent exhibition. Since July 2019, the Deutsches Bergbau-Museum Bochum, Leibniz Research Museum for Geo-resources, presents itself with four thematic tours: Hard Coal, Mining, Mineral Resources and Art.

www.bergbaumuseum.de/history

DISCOVERING MINING



HARD COAL, MINING, MINERAL RESOURCES AND ART

There are four tours available to guide visitors through our institution: the Hard Coal, Mining, Mineral Resources, and Art tours convey the full range of the aspects investigated at the Leibniz Research Museum for Geo-resources. The four tours feature over 3,000 exhibits – including objects from the Montanhistorisches Dokumentationszentrum of the Deutsches Bergbau-Museum Bochum, as well as Ioan items and new exhibits – all presented in a new light across over 8,000 qm of space.

With our new exhibition, we are rising to the challenge of presenting the subject matter and results of our in-house research activities in an exciting, educational and informative manner, and attracting the attention of the diverse target groups with a range of communicative approaches. Whether it be in the form of an interactive game, an educational multi-media station or hands-on exhibits – the aim is to communicate the content of the permanent exhibition in a variety of ways.

www.bergbaumuseum.de/tours

The renovation of the North Wing and the redesign of the Hard Coal and Mining tours were funded by the RAG-Stiftung as part of the "Glückauf Zukunft!" Project. The renovation of the South Wing and the redesign of the Mineral Resources and Art tours were funded as part of a joint national and state programme organised by the Federal Ministry of Education and Research and the Ministry of Culture and Science of the State of North-Rhine Westphalia. Both projects were further funded by the city of Bochum and the DMT-Gesellschaft für Lehre und Bildung mbH.







The design of the permanent exhibition has already received multiple awards – including the Red Dot Award "Brands & Communication" and the ADC Bronze Award.

VISITOR'S MINE

Wasn't the Deutsches Bergbau-Museum Bochum a mine at one time? No, it was not. But 20 metres deep underground, we have constructed a visitor's mine based on an actual one.

At the Deutsches Bergbau-Museum Bochum, the visitor's mine and the pit descent simulator also provide glimpses into the diverse facets of underground mining activity. Stretching over 1.2 km, the underground network of passageways gives our visitors an insight into everyday life underground and about historical technical developments in (coal) mining. www.bergbaumuseum.de/visitors-mine



Who actually ensures that everything below ground is kept to museum standard? At the Deutsches Bergbau-Museum Bochum, the Mining Technology | Logistics department is responsible for maintaining the visitors' mine. Most of the staff there were formerly employed in the coal industry, meaning they are intimately familiar with mining.



HEADFRAME

The headframe of the erstwhile Germania colliery – the museum's largest exhibit – is a platform affording far-ranging views across the Ruhr Area, and a region shaped by the colliery-dotted landscape. The turquoise-grey headframe is known and visible well beyond the city boundary of Bochum. It was only brought here in 1973. Since then it's stamped its mark on the city's skyline, functioning as a beacon of our institution, visible far off in the distance.

Our largest exhibit was once located somewhere completely different - namely over the main shaft of the Germania mine complex in Dortmund-Marten. Designed by renowned industrial architects, Fritz Schupp and Martin Kremmer, this solid-walled double headframe was constructed in 1943-44.

Weighing 650 t, 71.4 m high and with pulleys that are 8 m in diameter, it was reckoned to be the largest headframe in the world. As one of the most modern and high-performing hoisting systems in the German coal mining industry, it was still in operation up until 1971.

Under the intense glare of media interest, the frame was dismantled into individual parts following the decommissioning of the Germania mine complex. These parts, some weighing up to 30 t, were brought by special trucks to Bochum. The ensuing reassembly operation took several weeks. The preservation of the headframe as a cultural monument was thus ensured.

www.bergbaumuseum.de/headframe

In 2020, we decided to incorporate the colours of our famous landmark into the logo of the Deutsches Bergbau-Museum Bochum. The headframe and its pulleys have been integral figurative elements of our corporate design ever since.



SPECIAL EXHIBITIONS

Alongside our permanent exhibition with its four tours, the visitor's mine and the headframe tour, we also offer our visitors regularly changing special exhibitions. The subjects covered by these exhibitions range from mining archaeology and mining history, to the social debate surrounding the extraction, processing and use of geo-resources. Apart from conveying the results of our research departments to others, we also present exhibitions from partner museums.

www.bergbaumuseum.de/special-exhibitions

Of course, it's clear: curators arrange exhibits, mediators design tours, and restorers conserve objects – but who actually turns the lights on and off inside the museum? The Technology & Infrastructure department is staffed by skilled tradespeople such as painters or decorators, joiners and electricians, as well as other colleagues who take care of the IT and all the multimedia applications, along with the entire building services area. And it is they who turn the lights on and off.

DBM+

The DBM+, our special exhibition building, is a space specifically dedicated to this project. With almost 900 m² of floorspace, this area enables us to host regularly changing exhibitions. Opened in 2009, the building has been the recipient of multiple architectural prizes. www.bergbaumuseum.de/the-dbm-plus

VEREINIGUNG DER FREUNDE VON KUNST UND KULTUR IM BERGBAU E. V.

The Vereinigung der Freunde von Kunst und Kultur im Bergbau e. V. (VFKK) is a registered non-profit association founded in 1947, as the support body of the Deutsches Bergbau-Museum Bochum. It combines people from numerous different countries in Europe and overseas, who feel a connection to mining and its traditions, and who have a scientific and academic interest in mining and its history.

vfkk.de

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UNDERSTANDING MINING



Below and above ground, we share with you the history and the techniques of the extraction, processing and use of mined raw materials. We have various educational subject-based services available to ensure your visit to the Leibniz Research Museum for Geo-resources has a lasting impression. As a meeting place and an experience centre, we enter into dialogue with society, while seeking to interact with all generations.



Whether it be experiencing the visitor's mine with former miners, or joining our mediators to explore the wide range of content featured on our tours – we want to share our knowledge with you about the influence of geo-resources on the cultures of our world. It goes without saying that alongside the traditional formats, we offer digital services to allow you to perform your own investigations before, during, and after your visit to the fascinating world of mining. Our educational concept is rounded off by other inclusive, integrative services. www.bergbaumuseum.de/educational-offerings



Whether it be specific theme days or the extended Thursday with the Spätschicht, the annual ExtraSchicht (extra shift) or the traditional Bochumer Knappentag: our Deutsches Bergbau-Museum Bochum and its exhibitions can be experienced from a whole new perspective in a large or small-sized event setting. www.bergbaumuseum.de/events

SAY "I DO" UNDERGROUND

You can also say "I do" to each other at the Deutsches Bergbau-Museum Bochum. Your wedding ceremony hosted in an underground setting – get married with mining ambience included. More information: www.bergbaumuseum.de/heiraten

Our lectures and conferences round off our knowledge transfer offer. We approach various interesting topics on a scientific basis. We invite experts and laypeople alike to come along, listen and engage in discussions. www.bergbaumuseum.de/lectures-conferences



ADVICE & BOOKINGS

Would you like to book an individual tour, or do you require any advice about the range of educational services or event programmes offered by our museum?

Our visitor services staff are on hand to answer all your questions and queries: +49 234 5877-220 or **service@bergbaumuseum.de** (Tues. to Fri. from 9:00 am to 3:00 pm).

COLLECTING AND PRESERVING MINING HERITAGE

Since 2001, the Montanhistorisches Dokumentationszentrum (Mining History Document Centre) – or montan.dok for short – at the Deutsches Bergbau-Museum Bochum has been the common home to the Museum Collections and the written sources of the Bergbau-Archiv Bochum, established in 1969, as well as the inventories of the Library and Photo Library. In all three of these areas, employees are continuously working on preserving and utilising historical mining sources.



The montan.dok has a dedicated online database making its inventories accessible to users anywhere in the world: www.montandok.de Parts of the museum collections date back to the 19th century. With a humanities focus, they range from large-scale technical devices and working materials to coins and stamps featuring mining motifs. There are around 350,000 objects contained here.

The Bergbau-Archiv Bochum is the main industrial archive for mining in the Federal Republic of Germany. Here, we conserve more than 350 inventories and 33 specialist archive collections, along with around 7 kilometres of shelves containing publications... a unique collection.

The Library is home to approximately 85,000 volumes of works focussing primarily on mining-related topics. The Library is flanked by a Photo Library containing approximately 150,000 images.

This all makes montan.dok not just a key memorial to mining, but also the most important site for collection-based research into mining, which is available to national and international scholars alike. With its sophisticated research infrastructure, it makes a significant contribution to fulfilling the remit of the Deutsches Bergbau-Museum Bochum as a Leibniz Research Museum. www.bergbaumuseum.de/montan-dok-en



Pre-registration is required to use the Bergbau-Archiv Bochum and to research the montan.dok inventories.

We would be delighted to hear from you. Simply email **montan.dok@bergbaumuseum.de** or phone +49 234 5877-154.





RESEARCHING MINING

The unique character of the Deutsches Bergbau-Museum Bochum, Leibniz Research Museum for Geo-resources, lies in the link created between being a top-line research institute and a vibrant museum.

Through our national and international research, we develop new insights into mining throughout all the ages of human history. Our research projects are relevant and applicable in the national and international arena and are frequently conducted in partnership with prestigious university and non-university institutions, as well as partners in the worlds of culture and science.

Our research departments comprise archaeometallurgy, mining history, materials science, mining archaeology, alongside our Research Laboratory and the Montanhistorisches Dokumentationszentrum (montan.dok). www.bergbaumuseum.de/research

1 Deutsches Bergbau-Museum Bochum Leibniz Research Museum for Geo-resources

2 Haus der Archäologien

Research Areas Archaeometallurgy & Mining Archaeology Joint location with Ruhr-Universität Bochum

3 Haus für Material & Analytik

Research Departments Research Laboratory & Materials Science

4 Interim location Heintzmann

Montanhistorisches Dokumentationszentrum with Bergbau-Archiv Bochum, Museum Collections and Library | Photo Library



ARCHAEOMETALLURGY

Archaeometallurgy – a specialist field of archaeometry – applies natural scientific methods to explore issues surrounding the mining and spread of metals during (pre-) historic times. Archaeometallurgy is the study of every facet of the metallurgical chain of processes relating to the production of metals from ore, and their subsequent further processing into artefacts.

The archaeometallurgical research conducted by the Deutsches Bergbau-Museum Bochum encompasses geophysical prospection projects, experimental methods as well as analytical and materials science-based lab processes. Archaeometallurgy uses geophysical prospecting to examine the geology of mineral repositories, with the aim of documenting metal production areas based on deposits recorded there. Experimental methods are employed to examine the interactions of metallurgical, but also atmospheric processes, such as corrosion, with chemical and physical characteristics. All archaeometallurgical studies are based on analytics performed using cutting-edge methods.

Archaeometallurgy is certainly not limited to purely applying natural science methods to examine archaeological questions. Instead, it also focuses on the development, modification and optimisation of new methods of exploration, because the sample material differs significantly from those found in the specialist areas of natural science. One example of this is high-precision analysis of elements and isotopes, which must be adapted to the considerably more complex nature of the metallurgical material spectrum.

The Deutsches Bergbau-Museum Bochum has an archaeometallurgy research department, which was established in 1990 and is now located in the Haus der Archäologien. www.bergbaumuseum.de/archaeometallurgy





MINING HISTORY

The Mining History research department concerns itself with the social, cultural, technical and economic aspects of mining, including the processing and refining of mineral resources, from the Middle Ages to the present day. Spanning different periods and by applying methodological and theoretical approaches, the Mining History research department takes a particular interest in the networking of mining districts, the history of knowledge and technology, the mining boom periods, and the development of social security systems within the mining industry.

One research area explores the historical development of the knowledge of mining history. This is understood as including implicit, explicit, experience-based, scientific knowledge, knowledge embedded in materiality, alongside other aspects. Focal aspects observed here are the production, dissemination and application of this knowledge, and its representation in different media: images, written texts, maps. The ongoing processes of mechanisation that shaped the mining industry since the Middle Ages, are closely connected with these cultures of knowledge. These are studied alongside the development of knowledge in mining, within a broad framework of social, cultural and economic history, spanning different periods.

Large-scale mining operations have transformed the economy, society, infrastructure and culture of regions to a very great extent. The objective in this case, is to investigate the emergence but also disappearance of regions shaped by mining, as complex processes of structural change. Questions about the sustainability of mining are also being examined in this research area.

Theories and methods of mining historiography: This research area concerns the examination and further development of the methodological and theoretical foundations of mining historiography. In this case, the primary goal is to ensure the compatibility of mining history with the kinds of questions asked in "general history". The methodological and theoretical considerations are closely linked with the other research areas that examine issues across a range of periods. www.bergbaumuseum.de/mining-history

RESEARCH LABORATORY

The Research Laboratory of the Deutsches Bergbau-Museum Bochum is where we carry out chemical analyses and diverse evaluations of physical materials. To this end, we develop and adapt new procedures to meet the particular research demands. Our work delivers information regarding the characterisation of materials and material properties, as well as on questions concerning their origins.

The Research Laboratory can examine practically all kinds of organic and inorganic materials to establish their chemical, structural and physical compositions. A suitable preparation process and method is selected, depending on the research issue and the qualities of the sample.

The Research Laboratory has a variety of equipment, which in addition to its own projects, is particularly important for the Materials Science, Mining Archaeology and Archaeometallurgy research departments. In the Research Laboratory, we also conduct a series of tests on behalf of the Mining Technology | Logistics department, the Restoration department and the Materials Science department, to understand the way in which deterioration processes affect metals, plastics and natural stone. For materials that are already damaged, researchers examine protective agents and measures in order to preserve them from further damage.

External clients, such as universities and non-university research institutions, companies and private individuals, also use the entire spectrum of analytics carried out in the Research Laboratory, as well as our on-site sampling service. The Research Laborytory is located in the Haus für Material & Analytik.

www.bergbaumuseum.de/research-laboratory





MATERIALS SCIENCE

As a museum with a primary focus on technology, we engage with material-related issues, and identify material-based solutions for the study and preservation of our cultural heritage. With its equipment, facilities and chemical-physical research methods, the Materials Science department performs targeted fundamental research, as well as applied research in order to characterise materials and material properties, and to explain phenomena that cause damage.

The Materials Sciences department analyses materials at historic sites and monuments that have been damaged by environmental elements, also recording and quantifying the external impacts on materials and material surfaces. In addition, we examine material-specific reactions, alongside developing suitable detection methods. When analysing material found in archaeological excavations, our main focus is on the characterisation and the origin of the finds. The key areas of the Materials Science department therefore entail research, development and consulting activities.

We examine practically every organic and inorganic material to establish their chemical, structural and physical composition, and we select suitable preparation processes and methods depending on the research issue and the qualities of the sample. Our research department possesses a range of equipment particularly important for mining archaeology and archaeometallurgy projects.

We record environmental impacts and develop analytical procedures in order to evaluate the state of materials. In the case of material that has already been damaged, we test preserving agents, examining to what extent they have a stabilising effect and reduce further deterioration. There is also an increasingly urgent need to investigate other groups of materials, e. g., plastics and organic materials, which are present in various objects found in the Deutsches Bergbau-Museum Bochum's collections.

The research department Materials Science is located in the Haus für Material & Analytik. www.bergbaumuseum.de/materials-science

MINING ARCHAEOLOGY

The Mining Archaeology research department is primarily concerned with the history of how raw mineral materials have been used by humans. The aim is to understand the complex processes of extraction, preparation, subsequent treatment and the trading of raw materials. The focus here is on the production of metals, and the extraction and use of salt from prehistory to the Middle Ages.

The Mining Archaeology department conducts multidisciplinary research in many parts of the world, in very different landscapes: in high-altitude mountains, in the steppes, semi-desert regions, and coastal areas. The study of a wide variety of mining districts delivers information on the economic and industrial development of early societies, about mining technology and metallurgy, knowledge transfer and the flow of goods.

Along with archaeobotany and geoinformatics, mining archaeology investigates questions concerning regional structure, vegetation, agriculture and infrastructure. This is achieved by collecting two-dimensional and three-dimensional spatial data and managing it within an information system specifically designed for the archaeology of mining and raw materials. Then there is the development of tools, such as scanners and cameras, which are designed to cope with the special requirements that come with underground projects – such as working in small cavities. The data gathered in this way delivers insights into the technology used, and into aspects such as work progress and intensity or capacity.

These sources of information and the range of issues they entail, are wholly new to mining archaeology, and no other research institution is engaging with them to the same extent as the Deutsches Bergbau-Museum Bochum. The Haus der Archäologien is also home to the Mining Archaeology research area.

www.bergbaumuseum.de/mining-archaeology





MONTANHISTORISCHES DOKUMENTATIONSZENTRUM

The Montanhistorisches Dokumentationszentrum – or montan.dok for short – maintains and administers the scholarly collections of the Deutsches Bergbau-Museum Bochum, which are utilised by national and international researchers. The collections retained here also form the basis for numerous research projects. Our scientists perform research into the fields of mining, technical, social and economic history, collection research and digitization.

Our research projects are primarily dedicated to the analysis of the developments in mining history in the age of industrialisation. The main focus is on issues concerning the history of economics and commerce, but also on questions relating to the history of institutions, mentalities, the environment and culture - so far mainly on the basis of written and audio-visual records. The 250-year period over which the material has been collected, means that questions concerning material culture and mining history in the period of industrialisation, in particular, form a focal point of the work performed within montan.dok.

Other areas of work and research include the strategic conservation, preservation and expansion of the collections, together with the continuous optimisation of their physical and digital accessibility. This work is accompanied by continuous improvements in the methods for managing the collections. In addition, we explore material legacies using methods derived from historical collection and object-based research, and by considering industrial-archaeological and industrial-cultural aspects. Finally, we contextualise our research as part of the scientific discourse regarding historical authenticity, and in debates on de-industrialisation, the transformation of mining regions and structural change, and here we also apply ourselves to methods associated with oral and public history.

At the same time, we are constantly working to expand the range of digital information services concerning the collections retained by montan.dok. In particular, our online database www.montandok.de provides worldwide information on our scientific archive, literature, photography, film and material object collections. www.bergbaumuseum.de/montan-dok-research

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