



petrification

material transmutations and speculative archaeology

Emile de Visscher & Ophélie Maurus – March 23, 2023

•matter •cycle •carbon •firing •chemistry •pyrolysis •know-how •transmutation •ceramic •anthropocene

Petrification is a process of transformation from cellulose to rock, making it possible to imagine a ceramic artifact with a simple shape, from paper, rope, cotton, wood, or cardboard. It consists of two stages: the infusion of a silica solution into the model, followed by atmospheric pyrolysis. During this firing, carbon, and silica fuse to form silicon carbide, a rigid and abrasive ceramic, technically comparable to that of a diamond. This project — developed by Emile De Visscher in collaboration with scientists from ESPCI (Jérôme Bibette), UPMC (Florence Babonneau), Chimie ParisTech (Philippe Barboux), École des Arts Décoratifs (SACRe, Université PSL), and Humboldt Universität (Cluster Matters of Activity) — combines experimental scientific development with research through design to imagine an innovative artisanal manufacturing process.

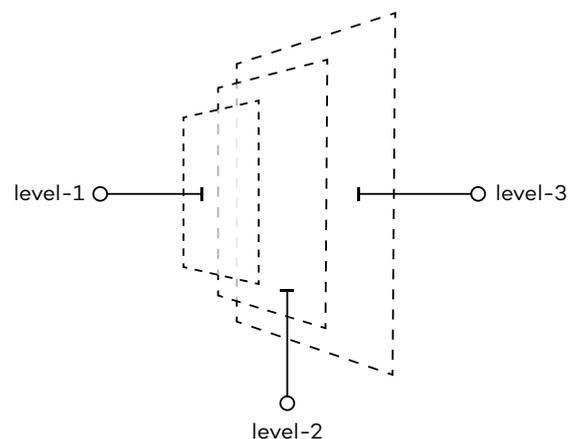
At the heart of the project lies the question of the durability of our forms of knowledge, know-how, and heritage. Petrification, as a transmutation of organic matter toward the inorganic, from the vegetal to the mineral, perpetuates ephemeral forms destined to deterioration. At a time when the ecological crisis and capitalism are generating major declines in biological forms (disappearance of species and seed varieties), but also in practices (disappearance of traditional techniques), the question arises of how to keep track of our knowledge and fragile material forms. Beyond its formal technical principle, the process of petrification

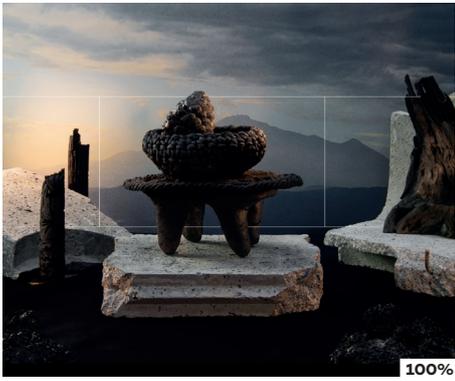
is symbolic in that it invokes a series of cultural contents rooted in many civilizations and regions of the world: in Greek mythology with Medusa, among the Celts with the dolmens, but also in Japanese, Papuan, and pre-Columbian traditions. Ubiquitous in the 18th and 19th centuries, both in connection with the practice of collecting fossils and the development of techniques for petrifying bodies, this process is still very much present in many current cultural forms, such as video games, science-fiction novels, and Hollywood films. This recurrence of petrification in the collective imagination refers to fundamental dualities shared between the fantasy of surviving death, the curse of stability, eternal life, or fear of apocalypse. The project thus unfolds as a speculative archaeological proposal, which stabilizes endangered elements for a distant future. The collaboration with Lucile Vareilles and Ophélie Maurus sought to account for this theoretical and historical dimension within the framework of the publication *able*. The iconographic element of this project refers us directly to the question of the Anthropocene because it uses firing, certainly energy consuming, to sequester carbon in a land base instead of in the atmosphere. Rather than helplessly endure the relentless accumulation of fossil wastes, plastics, and reinforced concrete, the project explores the possibilities of a collective, and therefore political decision to populate the Anthropocene layer.

This contribution was published on www.able-journal.org in a zoom.able format:

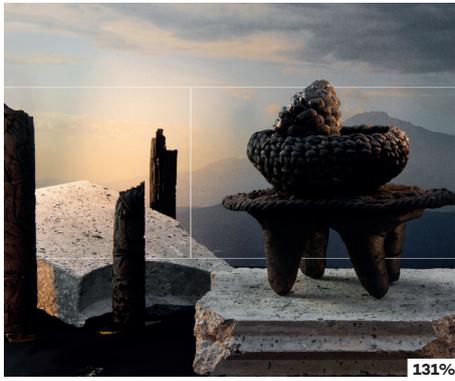
www.able-journal.org/en/petrification

The user can zoom in or out of the content by scrolling and pan the image in any direction. By zooming in, successive layers appear.

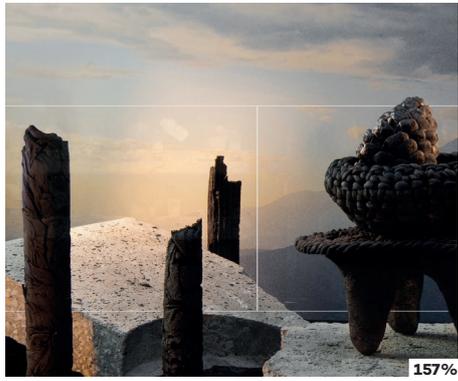




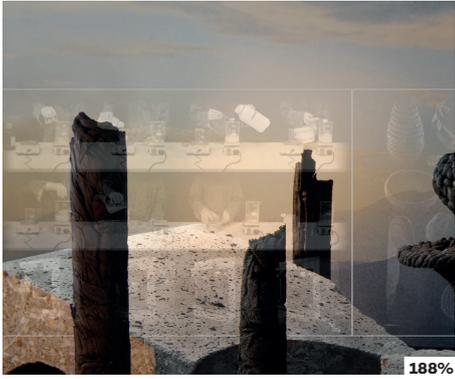
100%



131%



157%



188%



226%



271%



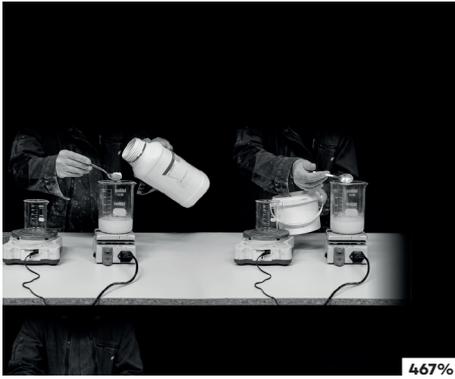
297%



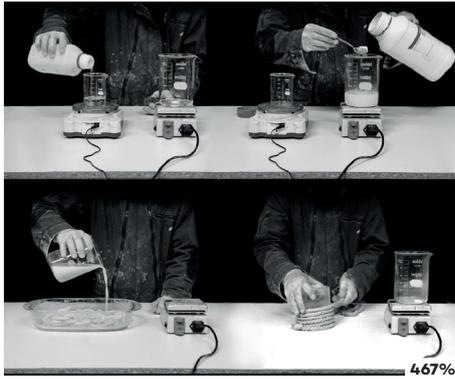
467%



467%



467%



467%



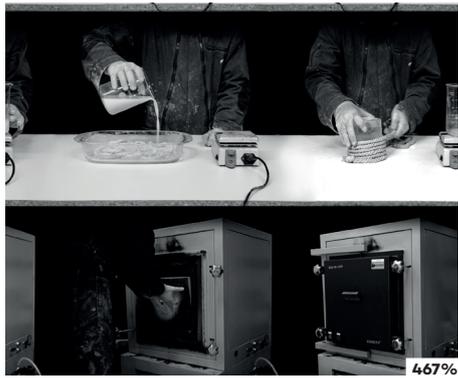
467%



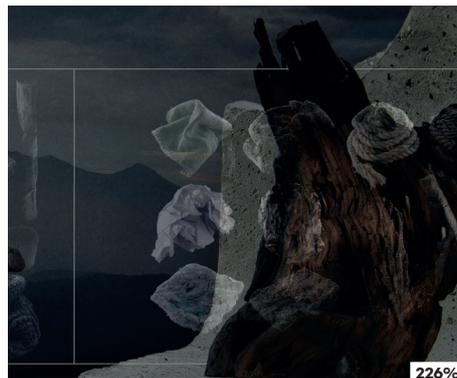
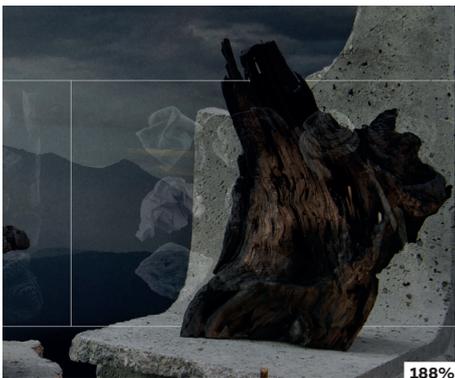
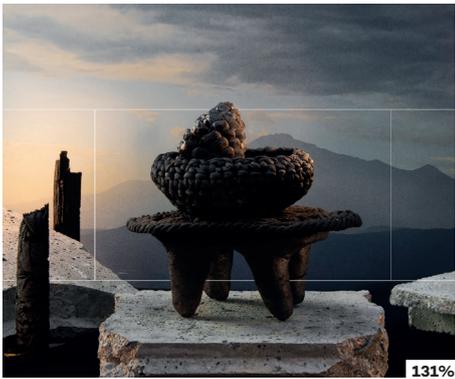
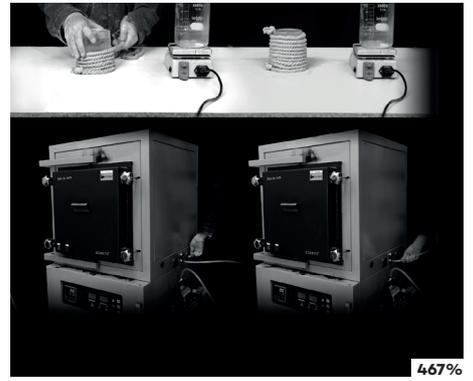
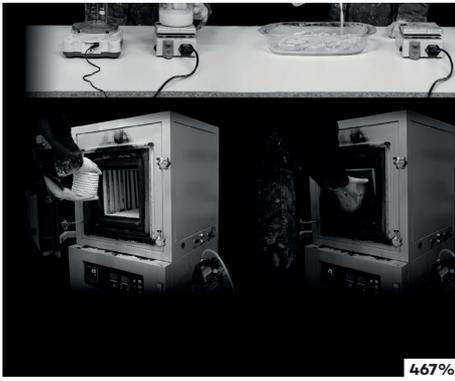
467%

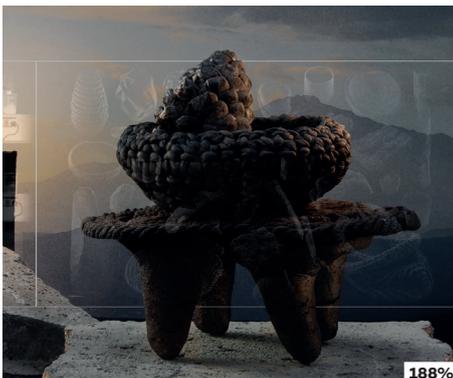
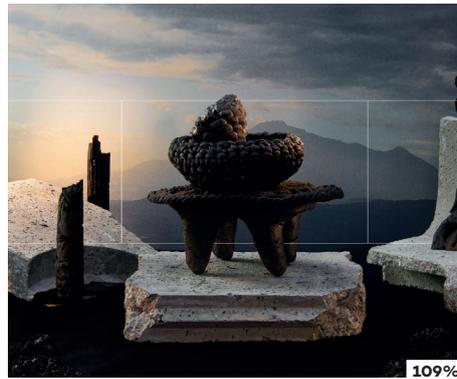


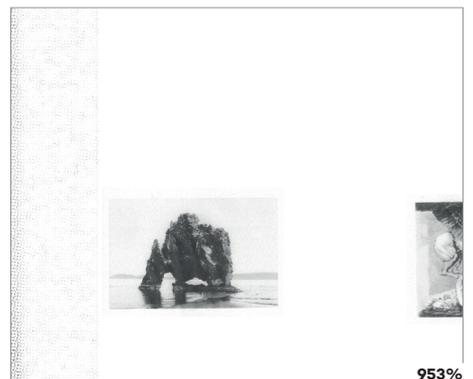
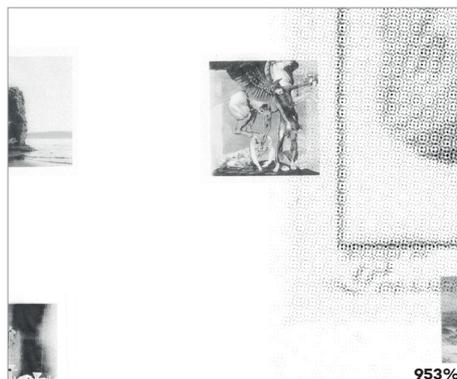
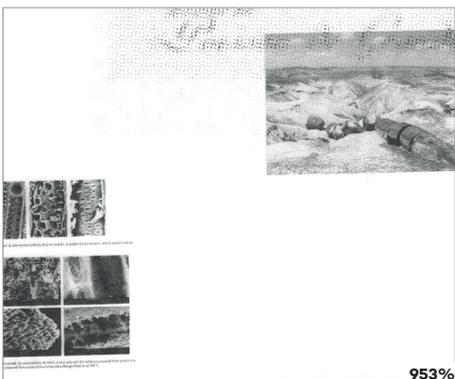
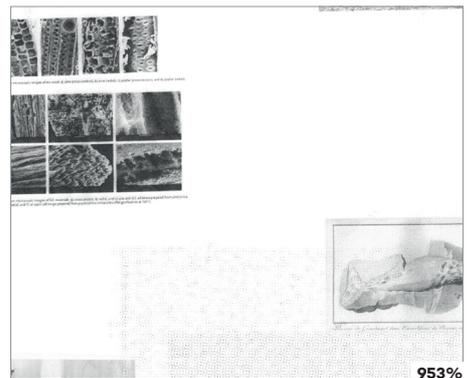
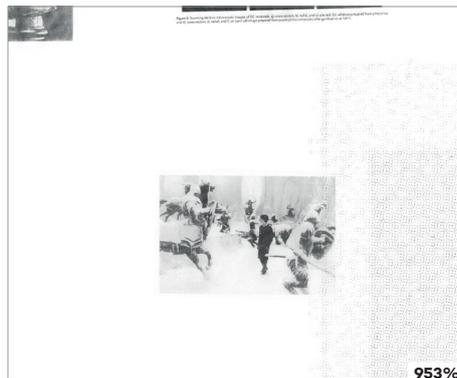
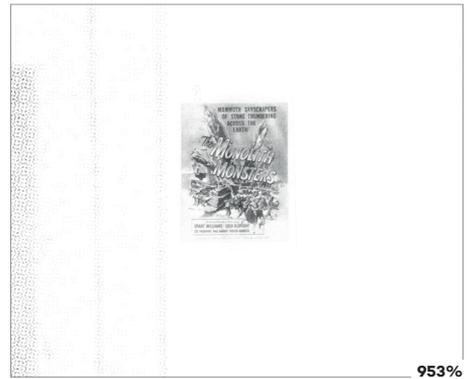
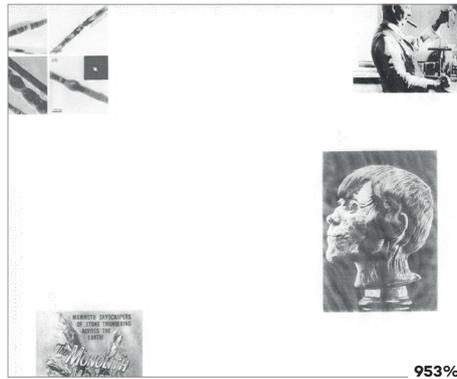
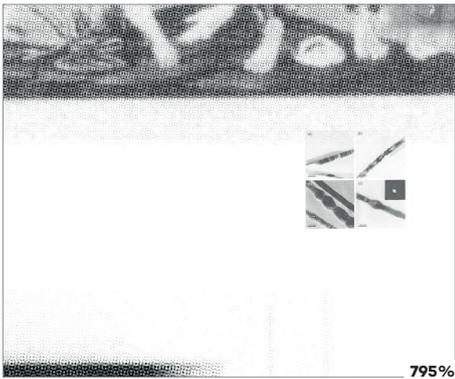
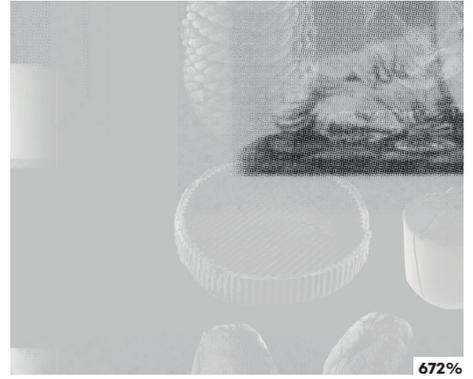
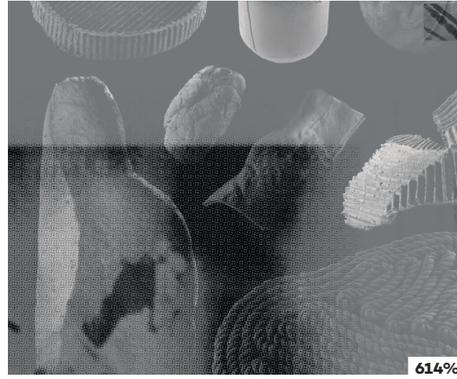
467%

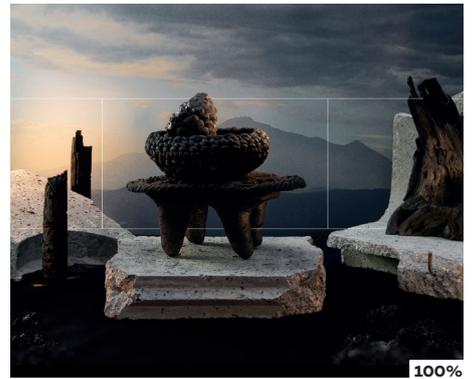
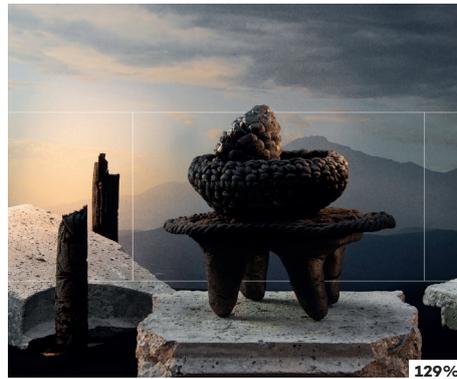
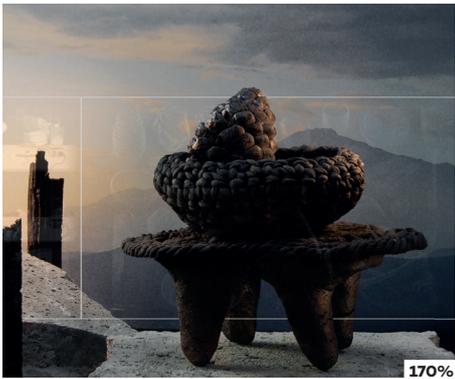
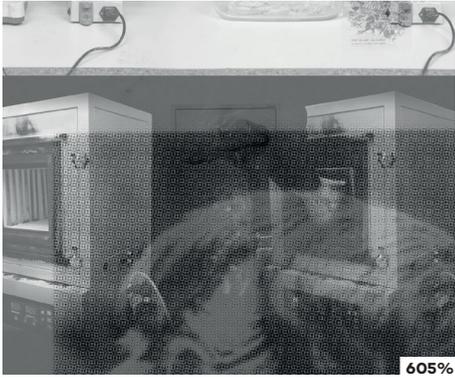
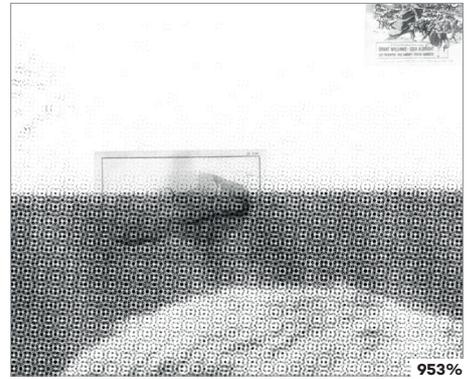


467%









credits

authors:

Emile de Visscher (PhD), research associate, Cluster of Excellence Matters of Activity: Image Space Material, Humboldt Universität, Berlin / EA SACRe, École des Arts Décoratifs, Université PSL, Paris
Ophélie Maurus, art director and photographer

scientific support:

Jérôme Bibette, Laboratoire Colloïdes et Matériaux Divisés, ESPCI ParisTech, Université PSL, Paris
Florence Babonneau, Laboratoire de Chimie des Matières Condensées, Sorbonne Université / CNRS
Philippe Barboux, Chimie ParisTech, Université PSL, as well as the students from the PIG program at Chimie ParisTech

research and financial support:

PhD program Science, Art, Création, Recherche (SACRe), Université Paris Sciences et Lettres, thesis prepared at EnsadLab under the supervision of Samuel Bianchini and Roger Malina
Matters of Activity: Image Space Material, Cluster of Excellence, Humboldt Universität, Berlin
Artistic direction, photography, and graphic design: Ophélie Maurus
Production support: Lucile Vareilles

acknowledgments:

Project developed with the help of Morgane Liger.
The author acknowledges the support of the Matters of Activity. Image Space Material Cluster of Excellence, funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2025 – 390648296.

about the authors

Emile De Visscher is an engineer and has a PhD in design. After his thesis (SACRe - PSL at École des Arts Décoratifs, Paris), he became a research associate at the Cluster Matters of Activity at Humboldt University in Berlin. His work focuses on the invention of new production tools, as much to conceive possible alternative technological futures as to question the relationship between technology and culture.

<https://edevisscher.com>
<https://matters-of-activity.de/en/>
<https://obliquite.com>

Ophélie Maurus is a French art director and photographer. Following a master's degree in image and media design at Penninghen, she joined the Bonsoir Paris studio as a graphic designer and photographer. Currently working freelance between art direction and architectural photography, she is also actively developing her own photographic practice.

<https://instagram.com/opheliemrs/?hl=fr>
<https://ophelie-maurus.com/>

rights and references

illustration rights and references

ICONOGRAPHIC REFERENCES OF THE THIRD LAYER

Emblematic of the presence of petrification in mainstream culture, the White Witch of C. S. Lewis's *Chronicles of Narnia* possesses a power that turns the living into stone.

The Chronicles of Narnia: The Lion, the Witch and the Wardrobe, 2005, dir. Andrew Adamson, screenshot, VOD, 00:02:20. Walt Disney Pictures/Walden Media. All rights reserved.

Since their earliest days, science-fiction films have been exploring petrification. The 1957 movie *Monolith Monsters* recounts the strange events following the crash of a meteorite into masses of black fragments with odd properties in the Californian desert. Brought back by a geologist in the small town of San Angelo, these fragments quickly reveal to have the particularity of growing when encountering water and seem to cause the petrification of the inhabitants of the village. A story of human survival while facing an unnatural disaster encroaching into an ecological nightmare.

Reynold Brown, *The Monolith Monsters*, 1957, film poster. https://commons.wikimedia.org/w/index.php?title=File:The_Monolith_Monsters.jpg&oldid=530274906. Public domain.

Naturally occurring petrification can be witnessed in Arizonian deserts and gave birth to a vibrant and surprising local craft, in the forms of vessels, sinks, and bathtubs.

Stefan Pauli, Petrified tree in Petrified Forest National Park, 2001, photograph. https://commons.wikimedia.org/w/index.php?title=File:Petrified_tree_in_Petrified_Forest.jpg&oldid=459806609. Creative Commons License (CC-BY-SA 3.0).

Medusa is probably the most iconic figure in mythology involving petrification in Latin cultures. Capable of petrifying through her gaze, Medusa had her head cut off by Perseus, who gave it to Athena as a gift. By placing Medusa's head on her shield, the goddess inherited the power.

Sir Edward Coley Burne-Jones, *The Death of Medusa I*, 1882, mixed media on paper, 124.5 × 116.9 cm, Southampton City Art: <https://www.southamptoncityartgallery.com/object/sotag-109>. Photo © 2018 Southampton City Art. Reproduced with permission.

The portrait of Medusa as her head is just cut off, by Italian painter Caravaggio, is renowned for the realism and dramatic facial expression of horror.

Caravaggio, *Medusa*, 1595–1598, oil on linen canvas, mounted on a poplar shield, 60 × 55 cm. Galeria degli Uffizi. <https://www.ilibio.org/wm/paint/auth/caravaggio/medusa.jpg>. Photo © WebMuseum Creative Commons License (CC-BY-SA 3.0).

The rock formation of Hvitserkur is tied to a Nordic legend, where a troll would have crossed the sea to destroy a Christian church and been caught by the daylight and petrified into rock.

Alexandre Buisse, *The freestanding seastack of Hvitserkur*, Iceland, 2011, photograph. https://commons.wikimedia.org/w/index.php?title=File:Hvitserkur_sea_stack,_Iceland.jpg&oldid=499363410. Creative Commons License (CC-BY-SA 3.0).

Carlo Vannini, *Untitled*, 2018. Published in Ivan Cenzi, *The Petrifier: The Paolo Gorini Anatomical Collection* (Modena: Logos Edizioni). All rights reserved.

The Poisson de Grandmont, from the area of Beaune in Bourgogne. First specimen of petrified fish found in France in 1747, the "Beaune salmon" has been the source of many analyses, fictions and appropriations. Despite appearances, it is not a salmon but a bony fish of the type "Pachycormus macropterus" dating from the Jurassic period. The scientific interest in this fish led Buffon to acquire it for the king's collections in 1767.

Engraving of specimen MHNH.F.JRE50, published in Faujas de Saint-Fond's *Essai de géologie* (1803: pl. 8), based on a drawing by Nicolas Maréchal (1753–1802), painter at the Muséum National d'Histoire naturelle. Published in *Geodiversitas* 3, no. 4 (2017): 695. <https://doi.org/10.5252/g2017n4a2>.

Scanning electron microscopic images of SiC materials: a) cross-section, b) radial, and c) pits and SiC whiskers prepared from pine/silica, and d) cross-section, e) radial, and f) an open cell image prepared from polar/silica composites after gasification at 700°C (Shin et al. 2005, fig. 3).

Edward Goodrich Acheson in the lab with his omnipresent cigar, testing Aquadag, a colloidal suspension of his artificial graphite: <https://www.sciencehistory.org/historical-profile/edward-goodrich-acheson>. All rights reserved, Acheson Industries.

bibliography and references

BIBLIOGRAPHY

De Visscher, Emile. Forthcoming. "Matière and Matériau: Thoughts on two ways of considering materials and their design." In *Environment 21, Let's Get Sustainable*. Edited by Annika Frye, Christiane Kruse, Antje Majewski, and Sandra Schramke. n.p.

De Visscher, Emile. 2021. "The Persistence of Fragile Assemblages." *Matters of Activity* EXC Berlin, Annual Conference, November 17, 2021: <https://www.virtualspace.matters-of-activity.de/>.

Eom, Jung-Hye, Kim Young-Wook, Santosh Raju. 2013. "Processing and properties of macroporous silicon carbide ceramics: A review." *Journal of Asian Ceramic Societies* 1: 220–242. <https://doi.org/10.1016/j.jascer.2013.07.003>.

Shin, Yongsoon and Gregory J. Exarhos. 2007. "Conversion of cellulose materials into nanostructured ceramics by biomineralization." *Cellulose* 14: 269–279. [10.1007/s10570-006-9101-0](https://doi.org/10.1007/s10570-006-9101-0)

Shin, Yongsoon, Chongming Wang, and G. J. Exarhos. 2005. "Synthesis of SiC Ceramics by the Carbothermal Reduction of Mineralized Wood with Silica." *Advanced Materials* 17, no. 1 (January 13): <https://doi.org/10.1002/adma.200400371>.

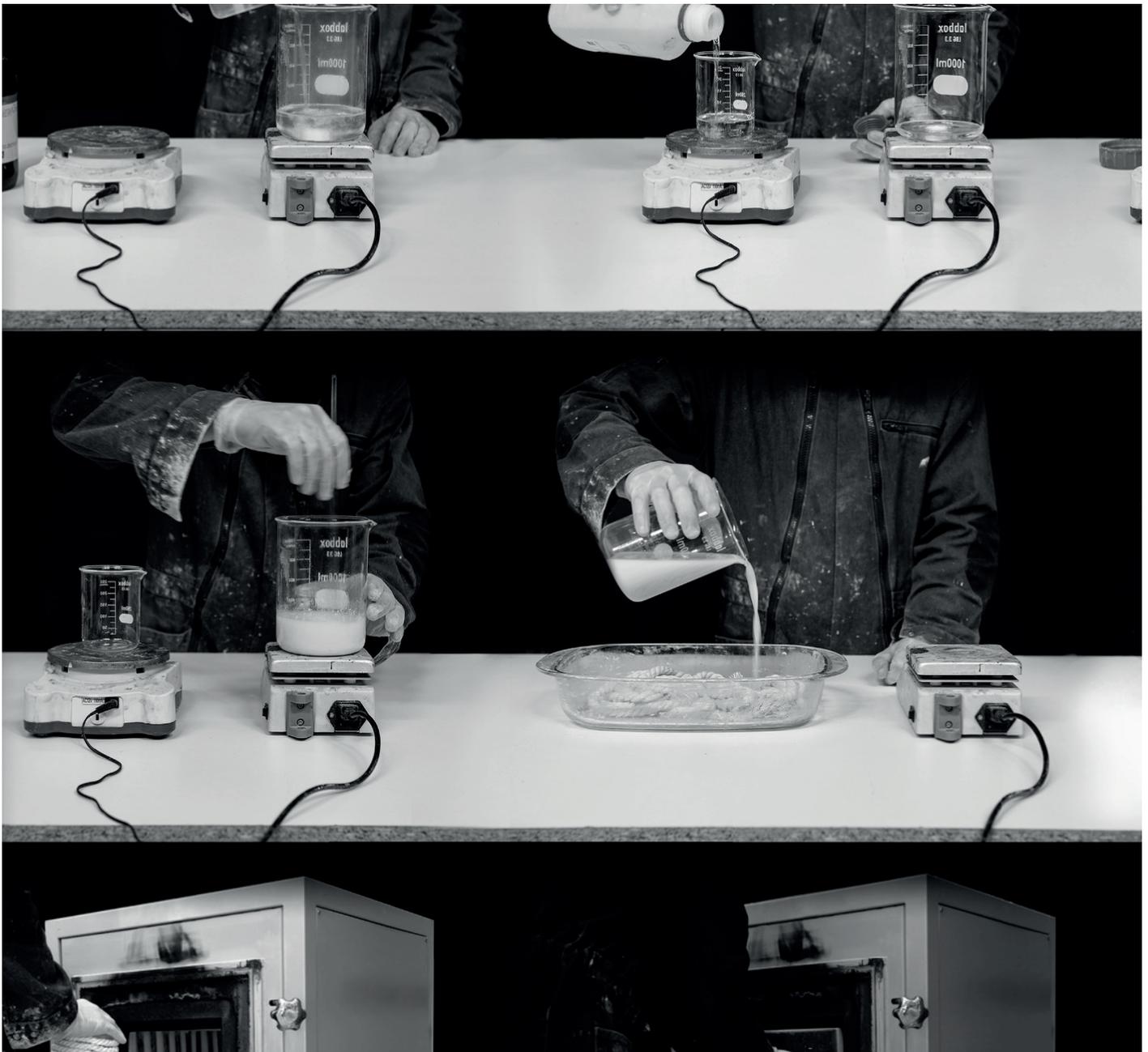
Shin, Yongsoon, Chong M. Wang, William D. Samuels, and Gregory J. Exarhos. 2007. "Synthesis of SiC nanorods from bleached wood pulp." *Material Letters* 61: <https://doi.org/10.1016/j.matlet.2006.10.035>.

Shin, Yongsoon, Jun Liu, Jeong Ho Chang, Zimin Nie, and Gregory J. Exarhos. 2001. "Hierarchically Ordered Ceramics Through Surfactant-Templated Sol-Gel Mineralization of Biological Cellular Structures." *Advanced Materials* 13, no. 10 (May 17): [https://doi.org/10.1002/1521-4095\(200105\)13:10<728::AID-ADMA728>3.0.CO;2-J](https://doi.org/10.1002/1521-4095(200105)13:10<728::AID-ADMA728>3.0.CO;2-J).

Vidor, Gian Marco. 2010. "Andro-lithe et pétrification des cadavres humains au XIX^{ème} siècle." *Frontières* 23, no. 1: <https://doi.org/10.7202/1004025ar>.

EXHIBITION

Emile De Visscher, Petrification, in the exhibition *Au Charbon, Pour un Design Post-Carbone*, curated by Amandine David and Giovanna Massoni, CID Grand Hornu, 2022–2023.



to cite this article

De Visscher, Emile and Ophélie Maurus. 2023. "Petrification: Material Transmutations and Speculative Archaeology." *able journal*: <https://able-journal.org/en/petrification>

MLA EN De Visscher, Emile, and Ophélie Maurus. "Petrification: Material Transmutations and Speculative Archaeology." *able journal*, 2023. <https://able-journal.org/en/petrification>

ISO 690 EN DE VISSCHER, Emile, and MAURUS, Ophélie. Petrification: Material Transmutations and Speculative Archaeology. *able journal* [online]. 2023. Available from: <https://able-journal.org/en/petrification>

APA EN De Visscher, E., & Maurus, O. (2023). Petrification: Material Transmutations and Speculative Archaeology. *able journal*. <https://able-journal.org/en/petrification>