

ARCL0098: Archaeometallurgy I: Mining and Extractive Metallurgy: Marcos Martinon-Torres

View Online



[1]

Abstract of International Conservation Literature: <http://aata.getty.edu/Home>.

[2]

Agricola, Georgius et al. 1912. De re metallica. The Mining magazine.

[3]

et al, G.-M. 1994. Early copper and Brass in Senegal. Society, culture, and technology in Africa. MASCA, University of Pennsylvania Museum of Archaeology and Anthropology. 45–62.

[4]

Aldenderfer, M. et al. 2008. From the Cover: Four-thousand-year-old gold artifacts from the Lake Titicaca basin, southern Peru. Proceedings of the National Academy of Sciences. 105, 13 (Apr. 2008), 5002–5005. DOI:<https://doi.org/10.1073/pnas.0710937105>.

[5]

Alipour, R. and Rehren, T. 2014. Persian Pulād Production: Chāhak Tradition. Journal of Islamic Archaeology. 1, 2 (2014), 231–261. DOI:<https://doi.org/10.1558/jia.v1i2.24174>.

[6]

Alipour, R. and Rehren, T. 2014. Persian Pulād Production: Chāhak Tradition. Journal of

Islamic Archaeology. 1, 2 (2014), 231–261. DOI:<https://doi.org/10.1558/jia.v1i2.24174>.

[7]

Allan, James W. et al. 2000. Persian steel: the Tanavoli collection. Oxford University Press for the Board of the Faculty of Oriental Studies, University of Oxford and the British Institute of Persian Studies.

[8]

Ancient Tin: Old Question and New Answer: 2006.
<http://www.cais-soas.com/CAIS/Science/tin.htm>.

[9]

Anguilano, L. et al. 2009. Roman Jarosite exploitation at Riotinto(Spain).
Archaeometallurgy in Europe: 2nd international conference, Aquileia, Italy, 17-21 June 2007 : selected papers. AIM. 21–29.

[10]

Archaeometallurgy in Europe and Associazione italiana di metallurgia 2007.
Archaeometallurgy in Europe: 2nd international conference, Aquileia, Italy, 17-21 June 2007 : selected papers. AIM.

[11]

Archaeometallurgy in Europe and Associazione italiana di metallurgia 2003.
Archaeometallurgy in Europe: international conference, 24-25-26 September 2003, Milan, Italy : proceedings. Associazione italiana di metallurgia.

[12]

Artioli, G. et al. 2015. Eneolithic copper smelting slags in the Eastern Alps: Local patterns of metallurgical exploitation in the Copper Age. Journal of Archaeological Science. 63, (Nov. 2015), 78–83. DOI:<https://doi.org/10.1016/j.jas.2015.08.013>.

[13]

Augustin F. C. Holl 2009. Early West African Metallurgies: New Data and Old Orthodoxy. *Journal of World Prehistory*. 22, 4 (2009), 415–438.

[14]

Augustin F. C. Holl 2009. Early West African Metallurgies: New Data and Old Orthodoxy. *Journal of World Prehistory*. 22, 4 (2009), 415–438.

[15]

Bagley, Robert W. et al. 1980. The great bronze age of China: an exhibition from the People's Republic of China. Metropolitan Museum of Art.

[16]

Bareham, T. 1994. Bronze casting experiments. *Historical metallurgy: journal of the Historical Metallurgy Society*. 28, 2 (1994), 112–116.

[17]

Barnard, Noel and Bulbeck, David 1996. Ancient Chinese and Southeast Asian bronze age cultures: the proceedings of a conference held at the Edith and Joy London Foundation property, Kioloa, NSW, 8-12 February, 1988 /: conference papers. SMC.

[18]

Bartelheim, M. et al. 2012. The silver of the South Iberian El Argar Culture: A first look at production and distribution. *Trabajos de Prehistoria*. 69, 2 (2012), 293–309.
DOI:<https://doi.org/10.3989/tp.2012.12093>.

[19]

Bass, G. 1997. Prolegomena to a study of maritime traffic in raw materials to the Aegean during the 14th and 13th centuries BC. *Techne: craftsmen, craftswomen and craftsmanship in the Aegean Bronze Age : proceedings of the 6th International Aegean Conference/6e Rencontre égéenne internationale Philadelphia, Temple University, 18-21 April 1996*. Université de Liège. 153–170.

[20]

Bayley, J. 1996. Innovation in later medieval urban metalworking. *Historical metallurgy: journal of the Historical Metallurgy Society*. 30, 2 (1996), 67–71.

[21]

Bayley, J. 1996. Innovation in later medieval urban metalworking. *Historical metallurgy: journal of the Historical Metallurgy Society*. 30, 2 (1996), 67–71.

[22]

Bayley, J. 2008. Medieval precious metal refining: archaeology and contemporary texts compared. *Archaeology, history and science: integrating approaches to ancient materials*. Left Coast Press. 131–150.

[23]

Bayley, J. 2008. Medieval precious metal refining: archaeology and contemporary texts compared. *Archaeology, history and science: integrating approaches to ancient materials*. Left Coast Press. 131–150.

[24]

Bayley, J. et al. 2008. *Metals and metalworking: a research framework for archaeometallurgy*. Historical Metallurgy Society.

[25]

Bayley, J. and Butcher, S. 2004. *Roman brooches in Britain: a technological and typological study based on the Richborough Collection*. Society of Antiquaries of London.

[26]

Bayley, J. and Rehren, T. 2007. Towards a functional and typological classification of crucibles. *Metals and mines: studies in archaeometallurgy*. Archetype in association with the British Museum. 46–55.

[27]

Bayley, J. and White, H. 2013. Evidence for workshop practices at the Tudor mint in the Tower of London. The Renaissance workshop. Archetype Publications in association with the British Museum. 138–143.

[28]

Begemann, F. et al. 1999. Tracing ancient tin via isotope analyses. The beginnings of metallurgy: proceedings of the International Conference 'The Beginnings of Metallurgy', Bochum 1995. Deutsches Bergbau-Museum. 277–284.

[29]

Begemann, F. 1999. Tracing tin via isotope analyses. The beginnings of metallurgy: proceedings of the International Conference 'The Beginnings of Metallurgy', Bochum 1995. Deutsches Bergbau-Museum. 277–284.

[30]

Belford, D. 2012. Hot blast iron smelting in the early 19th century: a re-appraisal. Historical metallurgy: journal of the Historical Metallurgy Society. 46, 1 (2012), 9–18.

[31]

Benjamin W. Roberts 2009. Production Networks and Consumer Choice in the Earliest Metal of Western Europe. Journal of World Prehistory. 22, 4 (2009), 461–481.

[32]

Benoit, Paul and Fluzin, Philippe 1995. Paléométaballurgie du fer et Cultures. Association pour l'Édition et la Diffusion des Études Historiques.

[33]

Benson, Elizabeth P. and Dumbarton Oaks 1979. Pre-Columbian metallurgy of South America: a conference at Dumbarton Oaks, October 18th and 19th, 1975. Dumbarton Oaks

Research Library and Collections, Trustees for Harvard University.

[34]

Biggs, L. et al. 2013. Prehistoric iron production technologies in the Upper Thai-Malay Peninsula: metallography and slag inclusion analyses of iron artefacts from Khao Sam Kaeo and Phu Khao Thong. *Archaeological and Anthropological Sciences*. 5, 4 (2013), 311–329. DOI:<https://doi.org/10.1007/s12520-012-0115-2>.

[35]

Bisson, Michael S. and Vogel, Joseph O. 2000. Ancient African metallurgy: the socio-cultural context. AltaMira.

[36]

Bisson, Michael S. and Vogel, Joseph O. 2000. Ancient African metallurgy: the socio-cultural context. AltaMira.

[37]

Blakelock, E. et al. 2009. Slag inclusions in iron objects and the quest for provenance: an experiment and a case study. *Journal of Archaeological Science*. 36, 8 (2009), 1745–1757. DOI:<https://doi.org/10.1016/j.jas.2009.03.032>.

[38]

Blakelock, E. et al. 2009. Slag inclusions in iron objects and the quest for provenance: an experiment and a case study. *Journal of Archaeological Science*. 36, 8 (Aug. 2009), 1745–1757. DOI:<https://doi.org/10.1016/j.jas.2009.03.032>.

[39]

Boiurgarit, D. and Thomas, N. 2011. From laboratory to field experiments: shared experience in brass cementation. *Historical metallurgy: journal of the Historical Metallurgy Society*. 45, 1 (2011), 8–16.

[40]

Boni, M. et al. 2000. Lead isotopic evidence for a mixed provenance for Roman water pipes from Pompeii. *Archaeometry*. 42, 1 (2000), 201–208.
DOI:<https://doi.org/10.1111/j.1475-4754.2000.tb00876.x>.

[41]

Bottaini, C. et al. 2016. New insights on Late Bronze Age Cu-metallurgy from Coles de Samuel hoard (Central Portugal): A combined multi-analytical approach. *Journal of Archaeological Science: Reports*. 7, (2016), 344–357.
DOI:<https://doi.org/10.1016/j.jasrep.2016.05.009>.

[42]

Bourgarit, D. and Thomas, N. 2012. Late medieval copper alloying practices: a view from a Parisian workshop of the 14th century AD. *Journal of Archaeological Science*. 39, 10 (2012), 3052–3070. DOI:<https://doi.org/10.1016/j.jas.2012.04.009>.

[43]

Bourgarit, D. and Thomas, N. 2012. Late medieval copper alloying practices: a view from a Parisian workshop of the 14th century AD. *Journal of Archaeological Science*. 39, 10 (2012), 3052–3070. DOI:<https://doi.org/10.1016/j.jas.2012.04.009>.

[44]

Branigan, Keith 1974. *Aegean metalwork of the Early and Middle Bronze Age*. Clarendon Press.

[45]

Bray, P. et al. 2015. Form and flow: the 'karmic cycle' of copper. *Journal of Archaeological Science*. 56, (Apr. 2015), 202–209. DOI:<https://doi.org/10.1016/j.jas.2014.12.013>.

[46]

Bray, P.J. and Pollard, A.M. 2012. A new interpretative approach to the chemistry of copper-alloy objects: Source, recycling and technology. *Antiquity*. 86, 333 (2012),

853–867.

[47]

Brownsword, R. 2004. Medieval metalwork: an analytical study of copper-alloy objects. *Historical metallurgy: journal of the Historical Metallurgy Society*. 38, 2 (2004), 84–105.

[48]

Bryan Hanks and Roger Doonan 2009. From Scale to Practice: A New Agenda for the Study of Early Metallurgy on the Eurasian Steppe. *Journal of World Prehistory*. 22, 4 (2009), 329–356.

[49]

Buchwald, Vagn Fabritius and Kongelige Danske videnskabernes selskab 2005. Iron and steel in ancient times. Det Kongelige Danske Videnskabernes Selskab.

[50]

Budd et al, P. 1992. The early development of metallurgy in the British Isles. *Antiquity*. 66, 252 (1992), 677–686. DOI:<https://doi.org/10.1017/S0003598X00039375>.

[51]

Budd, P.D. and Ottaway, B.S. 1991. The properties of arsenical copper alloys: implications for the development of Eneolithic metallurgy. *Archaeological sciences 1989: proceedings of a conference on the application of scientific techniques to archaeology*, Bradford, September 1989. Oxbow. 132–142.

[52]

Cardale de Schrimpff, Marianne and Bray, Warwick 2005. Calima and Malagana: art and archaeology in southwestern Colombia. Pro Calima Foundation.

[53]

Cech, B. 2012. A roman gold mining district in eastern Austria. *Historical metallurgy*:

Journal of the Historical Metallurgy Society. 46, 2 (2012), 66–77.

[54]

Cech, B. and Rehren, T. eds. 2014. Early iron in Europe. Éditions Monique Mergoïl.

[55]

Cech, B. and Rehren, T. eds. 2014. Early iron in Europe. Éditions Monique Mergoïl.

[56]

Charlton, M.F. et al. 2010. Explaining the evolution of ironmaking recipes – An example from northwest Wales. *Journal of Anthropological Archaeology*. 29, 3 (Sep. 2010), 352–367. DOI:<https://doi.org/10.1016/j.jaa.2010.05.001>.

[57]

Charlton, M.F. et al. 2012. Investigating the production provenance of iron artifacts with multivariate methods. *Journal of Archaeological Science*. 39, 7 (2012), 2280–2293. DOI:<https://doi.org/10.1016/j.jas.2012.02.037>.

[58]

Chen, K. et al. 2017. Evidence of arsenical copper smelting in Bronze Age China: A study of metallurgical slag from the Laoniupo site, central Shaanxi. *Journal of Archaeological Science*. 82, (Jun. 2017), 31–39. DOI:<https://doi.org/10.1016/j.jas.2017.04.006>.

[59]

Chen, K. et al. 2009. Special alloys from remote frontiers of the Shang Kingdom: scientific study of the Hanzhong bronzes from southwest Shaanxi, China. *Journal of Archaeological Science*. 36, 10 (Oct. 2009), 2108–2118. DOI:<https://doi.org/10.1016/j.jas.2009.04.016>.

[60]

Chernych, E.N. 2002. Some of the most important aspects and problems of early Metal Age

studying. *Die Anfänge der Metallurgie in der alten Welt = The beginnings of metallurgy in the old world*. Verlag Marie Leidorf. 25–31.

[61]

Chernykh, E. N. 1991. *Ancient metallurgy in the USSR: the early metal age*. Cambridge University Press.

[62]

Chirikure, S. 2014. *Geochemistry of Ancient Metallurgy: Examples from Africa and Elsewhere*. *Treatise on Geochemistry*. Elsevier. 169–189.

[63]

Chirikure, S. 2010. *Indigenous mining and metallurgy in Africa*. Cambridge University Press.

[64]

Chirikure, Shadreck. et al. 2009. Beyond furnaces and slags: a review study of bellows and their role in indigenous African metallurgical processes. *Azania: Archaeological Research in Africa*. 44, 2 (2009), 195–215. DOI:<https://doi.org/10.1080/00671990903047108>.

[65]

Cleere, H. 1984. Ironmaking in the economy of the ancient world: The potential of archaeometallurgy. *The Crafts of the blacksmith*. UISPP Comité pour la Sidérurgie Ancienne and the Ulster Museum. 1–6.

[66]

Cochet, André and Pernot, Michel 2000. *Le plomb en Gaule romaine: techniques de fabrication et produits*. Monique Mergoïl.

[67]

Cohen, C.R. et al. 2009. An archaeo-metallurgical study of the use of European furnaces in colonial Bolivia. Archaeometallurgy in Europe: 2nd international conference, Aquileia, Italy, 17-21 June 2007 : selected papers. AIM. 529–540.

[68]

Cohen, C.R. et al. 2009. When the wind blows: environmental adaptability in current day silver production within the Bolivian Andes. Proceedings: ISA 2006 : 36th International Symposium on Archaeometry : 2-6 May 2006, Quebec City, Canada. CELAT, Université Laval. 465–475.

[69]

Coustures, M.P. et al. 2003. The use of trace element analysis of entrapped slag inclusions to establish ore - Bare iron links: Examples from two Gallo-Roman iron-making sites in France (Les Martys, Montagne Noire, and Les Ferrys, Loiret). Archaeometry. 45, 4 (Nov. 2003), 599–613. DOI:<https://doi.org/10.1046/j.1475-4754.2003.00131.x>.

[70]

Craddock, P. et al. 2013. Simple sophistication: Mauryan silver production in North West India. British Museum Technical Research Bulletin 7. The British Museum (Online).

[71]

Craddock, P. 1995. The development of early mining geology. Early metal mining and production. Edinburgh University Press. 23–31.

[72]

Craddock, P. and Eckstein, K. 2003. Production of brass in Antiquity by direct reduction. Mining and metal production through the ages. British Museum. 230–216.

[73]

Craddock, P. and Hook, D. 2012. An economic history of the post-medieval world in 50 ingots: the British Museum collection of ingots from dated wrecks. The British Museum Technical Research Bulletin. 6, (2012), 55–68.

[74]

Craddock, P. T. 1995. Early metal mining and production. Edinburgh University Press.

[75]

Craddock, P. T. 1995. Early metal mining and production. Edinburgh University Press.

[76]

Craddock, P. T. et al. 2007. Metals and mines: studies in archaeometallurgy. Archetype in association with the British Museum.

[77]

Craddock, P. and Zhou, W. 2003. Traditional Zinc Production in Modern China: Survival and Evolution. Mining and metal production through the ages. British Museum. 267–292.

[78]

Craddock, Paul. 1999. Paradigms of metallurgical innovation in prehistoric Europe. The Beginnings of Metallurgy. Deutsches Bergbau-Museum. 175–192.

[79]

Craddock, P.T. 1990. Copper smelting in Bronze Age Britain: Problems and Possibilities. Early mining in the British Isles: proceedings of the Early Mining Workshop at Plas Tan y Bwlch, Snowdonia National Park Study Centre, 17-19 November, 1989. Plas Tan y Bwlch, Snowdonia National Park Study Centre. 69–71.

[80]

Craddock, P.T. 1991. Mining and smelting in Antiquity. Science and the past. British Museum Press. 57–73.

[81]

Craddock, P.T. 2010. New paradigms for old iron: thoughts on E. Zangato & A.F.C Holl's 'On the iron front'. *Journal of African archaeology*. 8, (2010), 29–36.

[82]

Craddock, P.T. and British Museum 1998. 2000 years of zinc and brass. British Museum.

[83]

Craddock, P.T. and Meeks, N.D. 1987. Iron in Ancient Copper. *Archaeometry*. 29, 2 (Aug. 1987), 187–204. DOI:<https://doi.org/10.1111/j.1475-4754.1987.tb00411.x>.

[84]

Crew, P. 1995. Aspects of the iron supply. Danebury: an Iron Age hillfort in Hampshire, Vol.6: A hillfort community in perspective. Council for British Archaeology. 276–286.

[85]

Crew, P. 1991. The experimental production of prehistoric bar iron. *Historical metallurgy: journal of the Historical Metallurgy Society*. 25, 2 (1991), 21–36.

[86]

Crew, P. 1991. The experimental production of prehistoric bar iron. *Historical metallurgy: journal of the Historical Metallurgy Society*. 25, 2 (1991), 21–36.

[87]

Crew, P. 1991. The iron and copper slags at Baratti, Populonia, Italy. *Historical metallurgy: journal of the Historical Metallurgy Society*. 25, (1991), 109–115.

[88]

Crew, Peter and Crew, Susan 1990. Early mining in the British Isles: proceedings of the Early Mining Workshop at Plas Tan y Bwlch, Snowdonia National Park Study Centre, 17-19 November, 1989. Plas Tan y Bwlch, Snowdonia National Park Study Centre.

[89]

Crossley, D. 1995. The blast furnace at Rockley, South Yorkshire. *The Archaeological journal*. 152, 1 (1995), 381–421. DOI:<https://doi.org/10.1080/00665983.1995.11021434>.

[90]

David Killick 2009. Cairo to Cape: The Spread of Metallurgy Through Eastern and Southern Africa. *Journal of World Prehistory*. 22, 4 (2009), 399–414.

[91]

Desaulty, A.-M. et al. 2009. Does it come from the Pays de Bray? Examination of an origin hypothesis for the ferrous reinforcements used in French medieval churches using major and trace element analyses. *Journal of Archaeological Science*. 36, 10 (Oct. 2009), 2445–2462. DOI:<https://doi.org/10.1016/j.jas.2009.07.002>.

[92]

Desaulty, A.-M. et al. 2009. Does it come from the Pays de Bray? Examination of an origin hypothesis for the ferrous reinforcements used in French medieval churches using major and trace element analyses. *Journal of Archaeological Science*. 36, 10 (Oct. 2009), 2445–2462. DOI:<https://doi.org/10.1016/j.jas.2009.07.002>.

[93]

Diaz-Andreu, M. and Montero, I. 2000. Metallurgy and social dynamics in the later prehistory of Mediterranean Spain. *Metals make the world go round: the supply and circulation of metals in Bronze Age Europe : proceedings of a conference held at the University of Birmingham in June 1997*. Oxbow. 116–132.

[94]

Dieudonne-Glad, N. and Conte, P. 2011. Smithing at the priory of Lavinadiere, Correze,

France, 13th and 16th centuries. *Historical metallurgy: journal of the Historical Metallurgy Society*. 45, 1 (2011), 1–7.

[95]

Dillmann, P. et al. 2012. Understanding the Walloon method of iron refining: archaeological and archaeometric experiments, phase 1. *Historical metallurgy: journal of the Historical Metallurgy Society*. 46, 1 (2012), 19–31.

[96]

Duncan E. Miller and Nikolaas J. Van Der Merwe 1994. Early Metal Working in Sub-Saharan Africa: A Review of Recent Research. *The Journal of African History*. 35, 1 (1994), 1–36.

[97]

Dungworth, D. 1997. Iron Age and Roman Copper Alloys from Northern Britain. *Internet Archaeology* 2. (1997).

[98]

Dungworth, D. 1997. Iron Age and Roman Copper Alloys from Northern Britain. *Internet Archaeology*. 2 (1997). DOI:<https://doi.org/10.11141/ia.2.2>.

[99]

Dungworth, D. 1997. Roman Copper Alloys: Analysis of Artefacts from Northern Britain. *Journal of Archaeological Science*. 24, 10 (1997), 901–910.
DOI:<https://doi.org/10.1006/jasc.1996.0169>.

[100]

Dungworth, D. 1997. Roman Copper Alloys: Analysis of Artefacts from Northern Britain. *Journal of Archaeological Science*. 24, 10 (Oct. 1997), 901–910.
DOI:<https://doi.org/10.1006/jasc.1996.0169>.

[101]

Dungworth, D. 2000. Serendipity in the foundry? Tin oxide inclusions in copper and copper alloys as an indicator of production process. *Bulletin of the metals museum*. 32, (2000), 1–5.

[102]

Dungworth, D. and Mephram, L. 2012. Prehistoric iron smelting in London: evicence from Shooters Hill. *Historical metallurgy: journal of the Historical Metallurgy Society*. 46, 1 (2012), 1–8.

[103]

Dungworth, D. and Nicholas, M. 2004. Caldarium? An antimony bronze used for medieval and post-medieval cast domestic vessels. *Historical metallurgy: journal of the Historical Metallurgy Society*. 38, 1 (2004), 24–34.

[104]

Durali-Mueller, S. et al. 2007. Roman lead mining in Germany: its origin and development through time deduced from lead isotope provenance studies. *Journal of Archaeological Science*. 34, 10 (2007), 1555–1567. DOI:<https://doi.org/10.1016/j.jas.2006.11.009>.

[105]

Edwards, Richard and Atkinson, Keith 1986. *Ore deposit geology and its influence on mineral exploration*. Chapman and Hall.

[106]

Fang, J.L. and McDonnell, G. 2011. The colour of copper alloys. *Historical metallurgy: journal of the Historical Metallurgy Society*. 45, 1 (2011), 52–61.

[107]

Farci, C. et al. 2017. Bronze production in the Iron Age of the Iberian Peninsula: The case of El Castro , Vigaña (Asturias, NW Spain). *Journal of Archaeological Science: Reports*. 11, (Feb. 2017), 338–351. DOI:<https://doi.org/10.1016/j.jasrep.2016.12.009>.

[108]

Feuerbach, A. et al. 1998. An examination of crucible steel in the manufacture of Damascus steel, including evidence from Merv, Turkmenistan. *Metallurgica Antiqua*: in honour of Hans-Gert Bachmann and Robert Maddin. Deutsches Bergbau-Museum. 37–44.

[109]

Feuerbach, A. et al. 1998. An examination of crucible steel in the manufacture of Damascus steel, including evidence from Merv, Turkmenistan. *Metallurgica Antiqua*: in honour of Hans-Gert Bachmann and Robert Maddin. Deutsches Bergbau-Museum. 37–44.

[110]

Frame, L. 2010. Metallurgical investigations at Godin Tepe, Iran, Part I: the metal finds. *Journal of Archaeological Science*. 37, 7 (2010), 1700–1715.
DOI:<https://doi.org/10.1016/j.jas.2010.01.030>.

[111]

Freestone, I. and Tite, M.S. 1986. Refractories in the ancient and preindustrial world. High technology ceramics: past, present, and future : the nature of innovation and change in ceramic technology. American Ceramic Society. 35–63.

[112]

Gale, N. 2001. Archaeology, science-based archaeology and the Mediterranean Bronze Age metals trade: a contribution to the debate. *European Journal of Archaeology*. 4, 1 (Apr. 2001), 113–130. DOI:<https://doi.org/10.1179/eja.2001.4.1.113>.

[113]

Gale, N. H. 1991. Bronze age trade in the Mediterranean. Åström.

[114]

Gale, N.H. et al. 2003. Early metallurgy in Bulgaria. Mining and metal production through

the ages. British Museum. 122–173.

[115]

Garcia-Guinea, J. et al. 2005. Chemical tracers in archaeological and natural gold: Aliseda Tartessos treasure and new discovered nuggets (SW Spain). *Gold Bulletin*. 38, 1 (Mar. 2005), 23–28. DOI:<https://doi.org/10.1007/BF03215224>.

[116]

Gassmann, G. 2002. Recent discoveries and excavations of 6th -2nd century BC furnaces in SW Germany. *Historical metallurgy: journal of the Historical Metallurgy Society*. 36, 2 (2002), 71–77.

[117]

Gelegdorj, E. et al. 2007. Transitions in cast iron technology of the nomads in Mongolia. *Journal of Archaeological Science*. 34, 8 (2007), 1187–1196. DOI:<https://doi.org/10.1016/j.jas.2006.10.007>.

[118]

Georgakopoulou, M. et al. 2011. Seriphos surfaces: A study of copper slag heaps and copper sources in the context of early Bronze Age Aegean metal production. *Archaeometry*. 53, 1 (2011), 123–145. DOI:<https://doi.org/10.1111/j.1475-4754.2010.00529.x>.

[119]

Giumlia-Mair, Alessandra R. et al. 2003. Le problème de l'étain à l'origine de la métallurgie: The problem of early tin. *Archaeopress*.

[120]

Giumlia-Mair, Alessandra R. and Lo Schiavo, Fulvia 2003. The problem of early tin. *Archaeopress*.

[121]

Golden, J. et al. 2001. Recent Discoveries Concerning Chalcolithic Metallurgy at Shiqmim, Israel. *Journal of Archaeological Science*. 28, 9 (2001), 951–963.
DOI:<https://doi.org/10.1006/jasc.2000.0626>.

[122]

Guerra, M.F. et al. 2007. The treasure of Guarrazar: Tracing the gold supplies in the Visigothic Iberian peninsula. *Archaeometry*. 49, 1 (Feb. 2007), 53–74.
DOI:<https://doi.org/10.1111/j.1475-4754.2007.00287.x>.

[123]

Guerra, M.F. and Calligaro, T. 1990. Gold and cultural heritage objects: a review of studies of provenance and manufacturing technologies. *Measurement science and technology*. 14 (1990), 1527–1537. DOI:<https://doi.org/10.1088/0957-0233/14/9/305>.

[124]

Hauptmann, A. et al. 2015. *Archaeometallurgy in Europe III: proceedings of the 3rd international conference ; June 29 - July 1, 2011*. Dt. Bergbau-Museum.

[125]

Hauptmann, A. 2003. Developments in copper metallurgy during the fourth and third millennia BC at Feinan, Jordan. *Mining and metal production through the ages*. British Museum. 90–100.

[126]

Hauptmann, A. et al. 2003. Early Bronze Age copper metallurgy at Shahr-i Sokhta (Iran), reconsidered. *Man and mining: Mensch und Bergbau : studies in honour of Gerd Weisgerber on occasion of his 65th birthday*. Deutsches Bergbau-Museum. 197–213.

[127]

Hauptmann, Andreas 2007. *The archaeometallurgy of copper: evidence from Faynan, Jordan*. Springer.

[128]

Haustein, M. et al. 2010. Tin isotopy - A new method for solving old questions. *Archaeometry*. 52, 5 (2010), 816-832.
DOI:<https://doi.org/10.1111/j.1475-4754.2010.00515.x>.

[129]

Haustein, M. et al. 2010. Tin isotopy: A new method for solving old questions. *Archaeometry*. 52, 5 (Oct. 2010), 816-832.
DOI:<https://doi.org/10.1111/j.1475-4754.2010.00515.x>.

[130]

Hayman, Richard 2005. *Ironmaking: the history and archaeology of the iron industry*. Tempus.

[131]

Hein, A. et al. 2007. Chemical and mineralogical examination of metallurgical ceramics from a Late Bronze Age copper smelting site in Cyprus. *Journal of Archaeological Science*. 34, 1 (Jan. 2007), 141-154. DOI:<https://doi.org/10.1016/j.jas.2006.04.005>.

[132]

Hendrickson, M. 2011. A transport geographic perspective on travel and communication in Angkorian Southeast Asia (ninth to fifteenth centuries). *World Archaeology*. 43, 3 (Sep. 2011), 444-457. DOI:<https://doi.org/10.1080/00438243.2011.605846>.

[133]

HMS Datasheets: <https://historicalmetallurgy.org/publications/hms-datasheets/>.

[134]

Hogarth, D. 1999. Martin Frobisher's largest 'gold mine' in Baffin Island. *Historical metallurgy: journal of the Historical Metallurgy Society*. 33, (1999), 85-92.

[135]

Hoppner, B. et al. 2005. Prehistoric copper production in the Inn Valley (Austria), and the earliest copper in central Europe. *Archaeometry*. 47, 2 (2005), 293–315.
DOI:<https://doi.org/10.1111/j.1475-4754.2005.00203.x>.

[136]

Hošek, J. et al. 2011. The archaeometallurgy of iron: recent developments in archaeological and scientific research. Institute of Archaeology of the ASCR.

[137]

Hošek, J. et al. 2011. The archaeometallurgy of iron: recent developments in archaeological and scientific research. Institute of Archaeology of the ASCR.

[138]

Hosler, Dorothy 1994. The sounds and colors of power: the sacred metallurgical technology of ancient West Mexico. MIT Press.

[139]

Host-Madsen, L. and Buchwald, V.F. The characterization and provenancing of ore, slag and iron from the Iron Age settlements at Snorup. *Historical metallurgy: journal of the Historical Metallurgy Society*. 33, 57–67.

[140]

Huang, X. et al. 2015. 3D numerical simulation on the flow field of single tuyere blast furnaces: A case study of the Shuiquangou iron smelting site dated from the 9th to 13th century in China. *Journal of Archaeological Science*. 63, (Nov. 2015), 44–58.
DOI:<https://doi.org/10.1016/j.jas.2015.08.009>.

[141]

Humphris, J. et al. 2009. Variability in single smelting episodes – a pilot study using iron slag from Uganda. *Journal of Archaeological Science*. 36, 2 (2009), 359–369.
DOI:<https://doi.org/10.1016/j.jas.2008.09.020>.

[142]

Humphris, J. and Carey, C. 2016. New methods for investigating slag heaps: Integrating geoprospection, excavation and quantitative methods at Meroe, Sudan. *Journal of Archaeological Science*. 70, (2016), 132–144.
DOI:<https://doi.org/10.1016/j.jas.2016.04.022>.

[143]

Humphris, J. and Rehren, T. 2013. *The world of iron*. Archetype.

[144]

Humphris, Jane and Rehren, Thilo 2013. *The world of iron*. Archetype.

[145]

Hunt Ortiz, Mark A. 2003. Prehistoric mining and metallurgy in South West Iberian Peninsula. *Archaeopress*.

[146]

Hunter, F. and Davis, M. 1994. Early Bronze Age lead — a unique necklace from southeast Scotland. *Antiquity*. 68, 261 (1994), 824–830.

[147]

Iles, L. and Martín-Torres, M. 2009. Pastoralist iron production on the Laikipia Plateau, Kenya: wider implications for archaeometallurgical studies. *Journal of Archaeological Science*. 36, 10 (2009), 2314–2326. DOI:<https://doi.org/10.1016/j.jas.2009.06.023>.

[148]

J. A. Charles 1967. Early Arsenical Bronzes - A Metallurgical View. *American Journal of Archaeology*. 71, 1 (1967), 21–26.

[149]

J. A. Charles 1967. Early Arsenical Bronzes-A Metallurgical View. *American Journal of Archaeology*. 71, 1 (1967), 21-26.

[150]

Jansen, M. et al. 2016. Platinum group placer minerals in ancient gold artifacts – Geochemistry and osmium isotopes of inclusions in Early Bronze Age gold from Ur/Mesopotamia. *Journal of Archaeological Science*. 68, (2016), 12-23.
DOI:<https://doi.org/10.1016/j.jas.2016.02.004>.

[151]

JISCMail - ARCH-METALS List at WWW.JISCMail.AC.UK:
<https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=ARCH-METALS>.

[152]

Joosten, Ineke 2004. Technology of early historical iron production in the Netherlands. Institute for Geo- and Bioarchaeology, Vrije Universiteit.

[153]

Jouttijärvi, A. 2017. Roman alloying practice. *Materials and Manufacturing Processes*. 32, 7-8 (2017), 813-826. DOI:<https://doi.org/10.1080/10426914.2017.1279325>.

[154]

Joyce C. White and Elizabeth G. Hamilton 2009. The Transmission of Early Bronze Technology to Thailand: New Perspectives. *Journal of World Prehistory*. 22, 4 (2009), 357-397.

[155]

Kearns, T. et al. 2010. Metal to mould: alloy identification in experimental casting moulds using XRF. *Historical metallurgy: journal of the Historical Metallurgy Society*. 44, 1 (2010), 48-58.

[156]

Keswani, P.S. 2005. Death, Prestige, and Copper in Bronze Age Cyprus. *American journal of archaeology*. 109, (2005), 341–401.

[157]

Killick, D. 2015. Invention and Innovation in African Iron-smelting Technologies. *Cambridge Archaeological Journal*. 25, 01 (2015), 307–319.
DOI:<https://doi.org/10.1017/S0959774314001176>.

[158]

Killick, D. 2001. Science, Speculation and the Origins of Extractive Metallurgy. *Handbook of archaeological sciences*. John Wiley. 483–492.

[159]

Killick, D. 2004. What do we know about African iron working? *Journal of African archaeology*. 2, 1 (2004), 97–112.

[160]

Killick, D. 2004. What do we know about African iron working? *Journal of African archaeology*. 2, 1 (2004), 97–112.

[161]

Killick, D. and Miller, D. 2014. Smelting of magnetite and magnetite-ilmenite iron ores in the northern Lowveld, South Africa, ca. 1000 CE to ca. 1880 CE. *Journal of Archaeological Science*. 43, (2014), 239–255. DOI:<https://doi.org/10.1016/j.jas.2013.12.016>.

[162]

Killick, David. and Fenn, T. 2012. Archaeometallurgy: The Study of Preindustrial Mining and Metallurgy. *Annual Review Of Anthropology*. 41, (2012), 559–575.
DOI:<https://doi.org/10.1146/annurev-anthro-092611-145719>.

[163]

Knapp, Arthur Bernard et al. 1998. Social approaches to an industrial past: the archaeology and anthropology of mining. Routledge.

[164]

Kunlong Chen Indigenous production and interregional exchange: late second-millennium BC bronzes from the Hanzhong basin, China. *Antiquity*. 90, 351, 665–678.
DOI:<https://doi.org/http://dx.doi.org/10.2307/3250165><http://dx.doi.org/10.1016/j.jas.2009.04.016><http://dx.doi.org/10.1016/j.jas.2009.04.017>.

[165]

La Niece, S. et al. 2007. Metals and mines: studies in archaeometallurgy. Archetype in association with the British Museum.

[166]

La Niece, S. et al. 2007. Metals and mines: studies in archaeometallurgy. Archetype in association with the British Museum.

[167]

La Niece, S. and Meeks, N. 2000. Diversity of Goldsmithing Traditions in the Americas and the Old World. *Precolumbian gold: technology, style and iconography*. British Museum Press. 220–239.

[168]

Lambert, J.B. 1997. Metals. *Traces of the past: unraveling the secrets of archaeology through chemistry*. Addison-Wesley. 168–213.

[169]

Lang, J. 2017. Roman iron and steel: A review. *Materials and Manufacturing Processes*. 32, 7–8 (Jun. 2017), 857–866. DOI:<https://doi.org/10.1080/10426914.2017.1279326>.

[170]

Lang, Janet and Craddock, P. T. 2003. Mining and metal production through the ages. British Museum.

[171]

Laughlin, G.J. and Todd, J.A. 2000. Evidence for Early Bronze Age tin ore processing. *Materials Characterization*. 45, 4-5 (2000), 269-273.
DOI:[https://doi.org/10.1016/S1044-5803\(00\)00111-X](https://doi.org/10.1016/S1044-5803(00)00111-X).

[172]

Lechtman, H. 1973. The Gilding of metals in pre-Columbian Peru. Application of science in examination of works of art: proceedings of the seminar September 7-16, 1965. [Museum of Fine Arts]. 38-52.

[173]

Lechtman, Heather 1984. Pre-Columbian Surface Metallurgy. *Scientific American*. 250, 6 (Jun. 1984), 56-63. DOI:<https://doi.org/10.1038/scientificamerican0684-56>.

[174]

Leusch, V. et al. 2015. On the Invention of Gold Metallurgy: The Gold Objects from the Varna I Cemetery (Bulgaria) - Technological Consequence and Inventive Creativity. *Cambridge Archaeological Journal*. 25, 01 (Feb. 2015), 353-376.
DOI:<https://doi.org/10.1017/S0959774314001140>.

[175]

Levy et al., T.E. 2002. Early Bronze Age metallurgy: a newly discovered copper manufactory in southern Jordan. *Antiquity*. 76, 292 (2002), 425-437.
DOI:<https://doi.org/10.1017/S0003598X00090530>.

[176]

Liu, S. et al. 2015. Bullion production in imperial China and its significance for sulphide ore smelting world-wide. *Journal of Archaeological Science*. 55, (Mar. 2015), 151–165.
DOI:<https://doi.org/10.1016/j.jas.2014.12.023>.

[177]

Liu, S. et al. 2015. Copper processing in the oases of northwest Arabia: technology, alloys and provenance. *Journal of Archaeological Science*. 53, (Jan. 2015), 492–503.
DOI:<https://doi.org/10.1016/j.jas.2014.10.030>.

[178]

Liu, S. et al. 2013. Microscopic study of Chinese bronze casting moulds from the Eastern Zhou period. *Journal of Archaeological Science*. 40, 5 (May 2013), 2402–2414.
DOI:<https://doi.org/10.1016/j.jas.2012.11.010>.

[179]

Liu, S. et al. 2013. Microscopic study of Chinese bronze casting moulds from the Eastern Zhou period. *Journal of Archaeological Science*. 40, 5 (2013), 2402–2414.
DOI:<https://doi.org/10.1016/j.jas.2012.11.010>.

[180]

MacDonald, K.C. et al. 2009. Dhar Néma: from early agriculture to metallurgy in southeastern Mauritania. *Azania: Archaeological Research in Africa*. 44, 1 (2009), 3–48.
DOI:<https://doi.org/10.1080/00671990902811330>.

[181]

Maddin, R. et al. 1999. Early metalworking at Cayonu. The beginnings of metallurgy: proceedings of the International Conference 'The Beginnings of Metallurgy', Bochum 1995. *Deutsches Bergbau-Museum*. 37–44.

[182]

Main Archaeo-Metallurgical Bibliography: 2004.
<http://users.ox.ac.uk/~salter/arch-metals/met-bib-ak.htm>.

[183]

Maldonado, B. et al. 2005. Archaeological copper smelting at Itziparatzico, Michoacan, Mexico, in Vandiver. Materials issues in art and archaeology VII: symposium held November 30-December 3, 2004, Boston, Massachusetts, U.S.A. Materials Research Society. 231-240.

[184]

Maldonado, Blanca. and Rehren, Thilo. 2009. Early copper smelting at Itziparatzico, Mexico. Journal of Archaeological Science. 36, 9 (2009), 1998-2006.
DOI:<https://doi.org/10.1016/j.jas.2009.05.019>.

[185]

Martinon-Torres, M. et al. 2003. A 16th century lab in a 21st century lab: archaeometric study of the laboratory equipment from Oberstockstall (Kirchberg am Wagram, Austria). Antiquity. 77, 298 (2003).

[186]

Martinon-Torres, M. et al. 2008. Diversifying the picture: indigenous responses to European arrival in Cuba. Archaeology international. 10 (2008), 37-40.

[187]

Martinón-Torres, M. et al. 2012. Forty Thousand Arms for a Single Emperor: From Chemical Data to the Labor Organization Behind the Bronze Arrows of the Terracotta Army. Journal of Archaeological Method and Theory. (2012).
DOI:<https://doi.org/10.1007/s10816-012-9158-z>.

[188]

Martinon-Torres, M. et al. 2009. Identifying materials recipes and choices: some suggestions for the study of archaeological cupels. Archaeometallurgy in Europe: 2nd international conference, Aquileia, Italy, 17-21 June 2007 : selected papers. (2009).

[189]

Martinon-Torres, M. 2012. Inside Solomon's House: An Archaeological Study of the Old Ashmolean Chymical Laboratory in Oxford. *Ambix*. 59, 1 (2012), 22-48.
DOI:<https://doi.org/10.1179/174582312X13296104891436>.

[190]

Martinón-Torres, M. et al. 2012. Metallic encounters in Cuba: The technology, exchange and meaning of metals before and after Columbus. *Journal of Anthropological Archaeology*. 31, 4 (2012), 439-454. DOI:<https://doi.org/10.1016/j.jaa.2012.03.006>.

[191]

Martinón-Torres, M. et al. 2007. Metals, microanalysis and meaning: a study of metal objects excavated from the indigenous cemetery of El Chorro de Maíta, Cuba. *Journal of Archaeological Science*. 34, 2 (2007), 194-204.
DOI:<https://doi.org/10.1016/j.jas.2006.04.013>.

[192]

Martinon-Torres, M. et al. 2007. Metals, microanalysis and meaning: a study of metal objects excavated from the indigenous cemetery of El Chorro de Malta, Cuba. *Journal of archaeological science*. 34, 2 (Feb. 2007), 194-204.
DOI:<https://doi.org/10.1016/j.jas.2006.04.013>.

[193]

Martinón-Torres, M. 2011. Some recent developments in the historiography of alchemy. *Ambix*. 58, 3 (2011), 215-237. DOI:<https://doi.org/10.1179/174582311X13129418299063>.

[194]

Martinon-Torres, M. 2007. The tools of the chymist: archeological and scientific analyses of early modern laboratories. *Chymists and chymistry: studies in the history of alchemy and early modern chemistry*. Science History Publications/USA. 149-163.

[195]

Martinón-Torres, M. and Rehren, T. 2002. Agricola and Zwickau: theory and practice of Renaissance brass production in SE Germany. *Historical metallurgy: journal of the Historical Metallurgy Society*. 45, 36 (2002), 95–111.

[196]

Martinon-Torres, M. and Rehren, T. 2008. Analytical study of iron slag from the Novgorod hinterland. *The archaeology of medieval Novgorod in context: studies in centre/periphery relations*. Oxbow. 185–194.

[197]

Martinon-Torres, M. and Rehren, T. 2009. Post-Medieval crucible production and distribution: A study of materials and materialities. *Archaeometry*. 51, 1 (2009), 49–74. DOI:<https://doi.org/10.1111/j.1475-4754.2007.00380.x>.

[198]

Martinón-Torres, M. and Rehren, T. 2014. Technical Ceramics. *Archaeometallurgy in global perspective: methods and syntheses*. B.W. Roberts and C.P. Thornton, eds. Springer. 107–131.

[199]

Martinón-Torres, M. and Rehren, T. 2014. Technical Ceramics. *Archaeometallurgy in global perspective: methods and syntheses*. B.W. Roberts and C.P. Thornton, eds. Springer. 107–131.

[200]

Martinon-Torres, M. and Rehren, T. 2007. Trials and errors in search of mineral wealth: metallurgical experiments in early colonial Jamestown. *Rittenhouse: journal of the American Scientific Instrument Enterprise*. 21, (2007), 82–97.

[201]

Martinon-Torres, M. and Rehren, Th. 2005. Alchemy, chemistry and metallurgy in Renaissance Europe. A wider context for fire assay remains. *Historical metallurgy: journal of the Historical Metallurgy Society*. 39, 1 (2005), 14–31.

[202]

Martinon-Torres, M. and Uribe Villegas, M.A. 2012. Composition, colour and context in Muisca votive metalwork (Colombia, AD 600-1800). *Antiquity*. 86, 333, (2012), 772–791.

[203]

Martinón-Torres, M. and Uribe-Villegas, M.A. 2015. The prehistoric individual, connoisseurship and archaeological science: The Muisca goldwork of Colombia. *Journal of Archaeological Science*. 63, (2015), 136–155.
DOI:<https://doi.org/10.1016/j.jas.2015.08.014>.

[204]

Martinón-Torres, Marcos. et al. 2008. Some problems and potentials of the study of cupellation remains: the case of post-medieval Montbéliard. *ArcheoSciences: Revue d'Archeometrie*. 32, (2008), 59–70.

[205]

Mary Van Buren and Barbara H. Mills 2005. Huayrachinas and Toco chimbos: Traditional Smelting Technology of the Southern Andes. *Latin American Antiquity*. 16, 1 (2005), 3–25.
DOI:<https://doi.org/10.2307/30042484>.

[206]

McEwan, Colin and British Museum 2000. *Precolumbian gold: technology, style and iconography*. British Museum Press.

[207]

Mei, J. et al. 2015. Archaeometallurgical studies in China: some recent developments and challenging issues. *Journal of Archaeological Science*. 56, (Apr. 2015), 221–232.
DOI:<https://doi.org/10.1016/j.jas.2015.02.026>.

[208]

Mei, J. 2009. Early metallurgy in China: some challenging issues in current studies. Metallurgy and civilisation: Eurasia and beyond : proceedings of the 6th International Conference on the Beginnings of the Use of Metals and Alloys (BUMA VI). Archetype. 9–16.

[209]

Mei, J. et al. 2009. Scientific examination of Shang-dynasty bronzes from Hanzhong, Shaanxi Province, China. *Journal of Archaeological Science*. 36, 9 (Sep. 2009), 1881–1891. DOI:<https://doi.org/10.1016/j.jas.2009.04.017>.

[210]

Mei, Jianjun 2000. Copper and bronze metallurgy in late prehistoric Xinjiang: its cultural context and relationship with neighbouring regions. Archaeopress.

[211]

Mei, Jianjun 2000. Copper and bronze metallurgy in late prehistoric Xinjiang: its cultural context and relationship with neighbouring regions. Archaeopress.

[212]

Merkel, J.F. 2007. Imperial Roman production of lead and silver in the northern part of Upper Moesia (Mt. Kosmaj area). *Glasnik: Srpsko arheološko društvo*. (2007), 39–78.

[213]

Miller, D.E. and Van Der Merwe, N.J. 1994. Early Metal Working in Sub-Saharan Africa: A Review of Recent Research. *The Journal of African History*. 35, 01 (Mar. 1994). DOI:<https://doi.org/10.1017/S0021853700025949>.

[214]

Mitteldeutscher Archäologentag 2014. Metals of Power – Early gold and silver [Metalle der Macht: Frühes Gold und Silber]. Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, Landesmuseum für Vorgeschichte.

[215]

Mitteldeutscher Archäologentag 2014. Metals of Power – Early gold and silver [Metalle der Macht: Frühes Gold und Silber]. Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, Landesmuseum für Vorgeschichte.

[216]

Mongiatti, A. et al. 2009. Testing ores for gold and silver in Renaissance Austria: new techniques, new discoveries. Proceedings: ISA 2006 : 36th International Symposium on Archaeometry : 2-6 May 2006, Quebec City, Canada. CELAT, Université Laval. 444/37-444/46.

[217]

Montero, I. ed. 2010. Archaeometallurgy: Technological, Economic and Social Perspectives in Late Prehistoric Europe (TESME). Trabajos de prehistoria. Trabajos de Prehistoria. 67, 2 (2010). DOI:<https://doi.org/10.3989/tp.2010.v67.i2>.

[218]

Moorey, P.R.S. 1994. Metalworking: 3. Base metals, part iii: copper and its alloys. Ancient Mesopotamian materials and industries: the archaeological evidence. Clarendon Press. 242-278.

[219]

Muhly, J. 1999. Copper and bronze in Cyprus and the Eastern Mediterranean. The archaeometallurgy of the Asian old world. Museum University of Pennsylvania. 15-25.

[220]

Muhly, James David and Wertime, Theodore A. 1980. The coming of the age of iron. Yale University Press.

[221]

Müller, R. et al. 2004. Almizaraque and the early copper metallurgy of southeast Spain: new data. Madrider Mitteilungen. 45, (2004), 33-56.

[222]

Murillo-Barroso, M. et al. 2017. Early metallurgy in SE Iberia. The workshop of Las Pilas (Mojácar, Almería, Spain). *Archaeological and Anthropological Sciences*. 9, 7 (Oct. 2017), 1539–1569. DOI:<https://doi.org/10.1007/s12520-016-0451-8>.

[223]

Murillo-Barroso, M. et al. 2010. Khao Sam Kaeo – an archaeometallurgical crossroads for trans-asiatic technological traditions. *Journal of Archaeological Science*. 37, 7 (2010), 1761–1772. DOI:<https://doi.org/10.1016/j.jas.2010.01.036>.

[224]

Murillo-Barroso, M. et al. 2010. Khao Sam Kaeo – an archaeometallurgical crossroads for trans-asiatic technological traditions. *Journal of Archaeological Science*. 37, 7 (2010), 1761–1772. DOI:<https://doi.org/10.1016/j.jas.2010.01.036>.

[225]

Murillo-Barroso, M. and Montero-Ruiz, I. 2012. Copper Ornaments in the Iberian Chalcolithic: Technology versus Social Demand. *Journal of Mediterranean Archaeology*. 25, (2012), 53–73. DOI:<https://doi.org/10.1558/jmea.v25i1.53>.

[226]

Murphy, S. and Baldwin, H. 2001. Early lead smelting sites in the Swaledale area of Yorkshire. *Historical metallurgy: journal of the Historical Metallurgy Society*. 35, 1 (2001), 1–22.

[227]

Nocete, et al, F. 2008. The smelting quarter of Valencina de la Concepción (Seville, Spain): the specialised copper industry in a political centre of the Guadalquivir Valley during the third millennium BC (2750-2500 BC). *Journal of Archaeological Science*. 35, 3 (Mar. 2008), 717–732. DOI:<https://doi.org/10.1016/j.jas.2007.05.019>.

[228]

Nørbach, Lars Christian 2003. Prehistoric and medieval direct iron smelting in Scandinavia and Europe: aspects of technology and society. Aarhus University Press.

[229]

Northover, P. 1989. Properties and use of arsenic-copper alloys. Archäometallurgie der alten Welt: Beiträge zum Internationalen Symposium 'Old World Archaeometallurgy', Heidelberg 1987. Der Anschnitt, Beiheft, (1989), 111–118.

[230]

O'Brien, W. 1999. Resource availability and metal supply in the insular Bronze Age. The beginnings of metallurgy: proceedings of the International Conference 'The Beginnings of Metallurgy', Bochum 1995. Deutsches Bergbau-Museum. 227–235.

[231]

O'Brien, William 1996. Bronze age copper mining in Britain and Ireland. Shire.

[232]

O'Brien, William and Brindley, Anna L. 2004. Ross Island: mining, metal and society in early Ireland. Dept. of Archaeology, National University of Ireland, Galway.

[233]

Ottaway, B. 2001. Innovation, production and specialization in early Prehistoric copper metallurgy. European Journal of Archaeology. 4, 1 (2001), 87–112.
DOI:<https://doi.org/10.1179/eja.2001.4.1.87>.

[234]

Ottaway, Barbara S. and Wang, Quanyu 2004. Casting experiments and microstructure of archaeologically relevant bronzes. Archaeopress.

[235]

Ottaway, B.S. and Seibel, S. 1998. Dust in the wind: experimental casting of bronze in sand moulds. *Paléométallurgie des cuivres: actes du colloque de Bourg-en-Bresse et Beaune*, 17-18 octobre 1997. M. Mergoil. 59–63.

[236]

Pagès, G. et al. 2011. A study of the Roman iron bars of Saintes-Maries-de-la-Mer (Bouches-du-Rhône, France). A proposal for a comprehensive metallographic approach. *Journal of Archaeological Science*. 38, 6 (2011), 1234–1252.
DOI:<https://doi.org/10.1016/j.jas.2010.12.017>.

[237]

Papakhristu, O.A. and Rehren, T. 2002. Techniques and technology of ceramic vessel manufacture: crucibles for wootz smelting in Central Asia. *Modern trends in scientific studies on ancient ceramics: papers presented at the 5th European Meeting on Ancient Ceramics*, Athens 1999. Archaeopress. 69–74.

[238]

Pare, C. F. E. 2000. *Metals make the world go round: the supply and circulation of metals in Bronze Age Europe*. Oxbow.

[239]

Park, J.-S. and Rehren, T. 2011. Large-scale 2nd to 3rd century AD bloomery iron smelting in Korea. *Journal of Archaeological Science*. 38, 6 (2011), 1180–1190.
DOI:<https://doi.org/10.1016/j.jas.2010.12.007>.

[240]

Paul T. Craddock 2000. From Hearth to Furnace: Evidences for the Earliest Metal Smelting Technologies in the Eastern Mediterranean. *Paléorient*. 26, 2 (2000), 151–165.

[241]

Paul T. Craddock 2013. *Refractories: Ceramics with a Purpose*. The Old Potter's Almanack.

18, 2 (2013), 9–20.

[242]

Paul T. Craddock 2014. Refractories with a purpose II: ceramics for casting. *The Old Potter's Almanack*. 19, 1 (2014), 2–17.

[243]

Paynter, S. 2007. Innovations in bloomery smelting in iron Age and Romano-British England. *Metals and mines: studies in archaeometallurgy*. Archetype in association with the British Museum. 202–210.

[244]

Paynter, S. 2006. Regional variations in bloomery smelting slag of the Iron Age and Romano-British periods. *Archaeometry*. 48, 2 (May 2006), 271–292.
DOI:<https://doi.org/10.1111/j.1475-4754.2006.00256.x>.

[245]

Paynter, S. Romano-British workshops for iron smelting and smithing at Westhawk Farm, Kent. *Historical metallurgy: journal of the Historical Metallurgy Society*. 41, 1, 15–31.

[246]

Pearce, Mark 1998. Reconstructing prehistoric metallurgical knowledge: the northern Italian Copper and Bronze Ages. *European Journal of Archaeology*. 1, 1 (1998), 51–70.
DOI:<https://doi.org/10.1179/eja.1998.1.1.51>.

[247]

Penhallurick, R. D. and Institute of Metals 1986. *Tin in antiquity: its mining and trade throughout the ancient world with particular reference to Cornwall*. Institute of Metals.

[248]

Pernicka, E. et al. 1993. Eneolithic and Early Bronze Age copper artefacts from the Balkans and their relation to Serbian copper ores. *Præhistorische Zeitschrift*. 68, 1 (1993), 1–54. DOI:<https://doi.org/10.1515/prhz.1993.68.1.1>.

[249]

Pernicka, E. et al. 1998. Late Uruk silver production by cupellation at Habuba Kabira, Syria. *Metallurgica Antiqua: in honour of Hans-Gert Bachmann and Robert Maddin*. Deutsches Bergbau-Museum. 123–134.

[250]

Pernicka, E. 2017. Provenance and recycling of ancient silver. A comment on "Iridium to provenance ancient silver" by Jonathan R. Wood*, Michael F. Charlton, Mercedes Murillo-Barroso, Marcos Martín-Torres. *J. Archaeol. Sci.* 81, 1–12. *Journal of Archaeological Science*. (Aug. 2017). DOI:<https://doi.org/10.1016/j.jas.2017.07.004>.

[251]

Pernicka, E. 1999. Trace element fingerprinting of ancient copper: a guide to technology or provenance. *Metals in antiquity*. Archaeopress. 163–171.

[252]

Phelps, William W. et al. 1999. The Point Iria wreck: interconnections in the Mediterranean, ca. 1200 BC. *Hellenic Institute of Marine Archaeology*.

[253]

Piggott, V.C. and Ciarla, R. 2007. On the origins of metallurgy in prehistoric Southeast Asia: the view from Thailand. *Metals and mines: studies in archaeometallurgy*. Archetype in association with the British Museum. 76–88.

[254]

Piggott, V.C. and Weisgerber, G. 1998. Mining archaeology in geological context. The prehistoric copper mining complex at Phu Lon, Nong Khai Province, northeast Thailand. *Metallurgica Antiqua: in honour of Hans-Gert Bachmann and Robert Maddin*. Deutsches Bergbau-Museum. 69–76.

[255]

Pigott, V.C. 1999. Reconstructing the copper production process as practised among prehistoric mining/metallurgical communities in the Khao Wong Prachan Valley of central Thailand. *Metals in antiquity*. Archaeopress. 10–21.

[256]

Pigott, V.C. and Ciarla, R. 2007. On the origins of metallurgy in prehistoric Southeast Asia: the view from Thailand. *Metals and mines: studies in archaeometallurgy*. Archetype in association with the British Museum. 76–88.

[257]

Plaza, M.T. and Martín-Torres, M. 2015. Metallurgical traditions under Inka rule: a technological study of metals and technical ceramics from the Aconcagua Valley, Central Chile. *Journal of Archaeological Science*. 54, (Feb. 2015), 86–98.
DOI:<https://doi.org/10.1016/j.jas.2014.11.029>.

[258]

Pleiner, Radomír 2006. Iron in archaeology: early European blacksmiths. *Archeologický ústav AV ČR*.

[259]

Pleiner, Radomír 2000. Iron in archaeology: the European bloomery smelters. *Archeologický ústav AVČR*.

[260]

Ploquin, A. et al. eds. 2010. Mines et metallurgies anciennes du plomb dans leurs environnements. Apports des methodes contribuant a leur etude. Special issue of *ArcheoSciences: Revue d'Archeometrie*. 34, (2010).

[261]

Pollard, A.M. et al. 2015. Characterising copper-based metals in Britain in the first millennium AD: a preliminary quantification of metal flow and recycling. *Antiquity*. 89, 345 (2015), 697–713. DOI:<https://doi.org/10.15184/aqy.2015.20>.

[262]

Pollard, A.M. et al. 2014. Is there something missing in scientific provenance studies of prehistoric artefacts? *Antiquity*. 88, 340 (Jun. 2014), 625–631.
DOI:<https://doi.org/10.1017/S0003598X00101255>.

[263]

Ponting, M. Keeping up with the Romans? Romanisation and Copper Alloys in First Revolt Palestine. *IAMS Newsletter*. 22, 3–6.

[264]

Ponting, M.J. 2008. Roman military copper-alloy artefacts from Israel: questions of organization and ethnicity. *Archaeometry*. 44, 4 (Jun. 2008), 555–571.
DOI:<https://doi.org/10.1111/1475-4754.t01-1-00086>.

[265]

Pryce, T. O.Natapintu, S. 2009. Smelting Iron from Laterite: Technical Possibility or Ethnographic Aberration? *Asian Perspectives: Journal of Archeology for Asia & the Pacific*. 48, 2 (2009), 249–264.

[266]

Pryce, T.O. et al. 2007. 'De Caerimoniae' Technological choices in copper-smelting furnace design at early Bronze Age Chrysokamino, Crete. *Archaeometry*. 49, 3 (2007), 543–557.
DOI:<https://doi.org/10.1111/j.1475-4754.2007.00319.x>.

[267]

Pryce, T.O. et al. 2007. 'De Caerimoniae' Technological choices in copper-smelting furnace design at early Bronze Age Chrysokamino, Crete. *Archaeometry*. 49, 3 (2007), 543–557.
DOI:<https://doi.org/10.1111/j.1475-4754.2007.00319.x>.

[268]

Pryce, T.O. et al. 2010. Prehistoric copper production and technological reproduction in the Khao Wong Prachan Valley of Central Thailand. *Archaeological and Anthropological Sciences*. 2, 4 (Dec. 2010), 237–264. DOI:<https://doi.org/10.1007/s12520-010-0043-y>.

[269]

Pryce, T.O. et al. 2010. Prehistoric copper production and technological reproduction in the Khao Wong Prachan Valley of Central Thailand. *Archaeological and Anthropological Sciences*. 2, 4 (2010), 237–264. DOI:<https://doi.org/10.1007/s12520-010-0043-y>.

[270]

Pryce, T.O. et al. 2011. SouthEast Asia's first isotopically defined prehistoric copper production system: when did extractive metallurgy begin in the Khao Wong Prachan Valley of central Thailand? *Archaeometry*. 53, 1 (2011), 146–163.
DOI:<https://doi.org/10.1111/j.1475-4754.2010.00527.x>.

[271]

Pulak, C. 2000. The copper and tin ingots from the Late Bronze Age shipwreck at Uluburnun. *Anatolian metal I*. Deutsches Bergbau-Museum. 137–157.

[272]

Pulak, Cemal et al. 2005. *Das Schiff von Uluburun: Welthandel vor 3000 Jahren : Katalog der Ausstellung des Deutschen Bergbau-Museums Bochum vom 15. Juli 2005 bis 16. Juli 2006*. Deutsches Bergbau-Museum.

[273]

Rademakers, F.W. and Rehren, T. 2016. Seeing the forest for the trees: Assessing technological variability in ancient metallurgical crucible assemblages. *Journal of Archaeological Science: Reports*. 7, (Jun. 2016), 588–596.
DOI:<https://doi.org/10.1016/j.jasrep.2015.08.013>.

[274]

Radivojevic, M. et al. 2013. Tainted ores and the rise of tin bronzes in Eurasia, c. 6500 years ago. *Antiquity*. 87, 338 (2013), 1030–1045.
DOI:<https://doi.org/10.1017/S0003598X0004984X>.

[275]

Radivojevic, R. et al. 2010. On the origins of extractive metallurgy: new evidence from Europe. *Journal of archaeological science*. 37, 11 (2010), 2775–2787.
DOI:<https://doi.org/10.1016/j.jas.2010.06.012>.

[276]

Ramage, Andrew et al. 2000. King Croesus' gold: excavations at Sardis and the history of gold refining. British Museum Press in association with Archaeological Exploration of Sardis, Harvard University Art Museums.

[277]

Rehder, J. 1999. High temperature technology in antiquity. The beginnings of metallurgy: proceedings of the International Conference 'The Beginnings of Metallurgy', Bochum 1995. Deutsches Bergbau-Museum. 305–315.

[278]

Rehren, T. et al. 2013. 5,000 years old Egyptian iron beads made from hammered meteoritic iron. *Journal of Archaeological Science*. 40, 12 (2013), 4785–4792.
DOI:<https://doi.org/10.1016/j.jas.2013.06.002>.

[279]

Rehren, T. 2003. Crucibles as reaction vessels in ancient metallurgy. Mining and metal production through the ages. British Museum. 207–215.

[280]

Rehren, T. et al. 2007. Decisions set in slag: the human factor in African iron smelting. Metals and mines: studies in archaeometallurgy. Archetype in association with the British

Museum. 211–218.

[281]

Rehren, T. et al. 2012. Large scale smelting of speiss and arsenical copper at Early Bronze Age Arisman, Iran. *Journal of Archaeological Science*. 39, 6 (2012), 1717–1727.
DOI:<https://doi.org/10.1016/j.jas.2012.01.009>.

[282]

Rehren, T. et al. 1999. Medieval lead-silver smelting in the Siegerland, West Germany. *Historical metallurgy: journal of the Historical Metallurgy Society*. Historical Metallurgy Society. 73–84.

[283]

Rehren, T. 1999. Small Size, Large Scale Roman Brass Production in Germania Inferior. *Journal of Archaeological Science*. 26, 8 (Aug. 1999), 1083–1087.
DOI:<https://doi.org/10.1006/jasc.1999.0402>.

[284]

Rehren, T. 2011. The production of silver in South America. *Archaeology international*. 13/14, (2011), 76–86. DOI:<https://doi.org/10.5334/ai.1318>.

[285]

Rehren, T. 1999. The same... but different: A juxtaposition of Roman and Medieval brass making in Central Europe. *Metals in antiquity*. Archaeopress. 252–257.

[286]

Rehren, T. 1999. The same.... but different: A juxtaposition of Roman and Medieval brass making in Central Europe. *Metals in antiquity*. Archaeopress. 252–257.

[287]

Rehren, T. and Martínón-Torres, M. 2008. *Naturam ars imitata: European brassmaking between craft and science*. Archaeology, history and science: integrating approaches to ancient materials. Left Coast Press. 167–188.

[288]

Rehren, T. and Papakhristu, O. 1994. Cutting Edge Technology - The Ferghana process of medieval crucible steel making. *Metalla: Forschungsberichte des Deutschen Bergbau-Museums*. (1994), 55–79.

[289]

Rehren, T. and Prange, M. 1998. Lead metal and patina: a comparison. *Metallurgica Antiqua: in honour of Hans-Gert Bachmann and Robert Maddin*. Deutsches Bergbau-Museum. 183–196.

[290]

Rehren, T. and Temme, M. 1994. Pre-Columbian gold processing at Putushio, South Ecuador: the archaeometallurgical evidence. *Archaeometry of pre-Columbian sites and artifacts: proceedings of a symposium organized by the UCLA Institute of Archaeology and the Getty Conservation Institute, Los Angeles, California, March 23-27, 1992*. Getty Conservation Institute. 267–284.

[291]

Rehren, T. and Temme, M. 1994. Pre-Columbian gold processing at Putushio, South Ecuador: the archaeometallurgical evidence. *Archaeometry of pre-Columbian sites and artifacts: proceedings of a symposium organized by the UCLA Institute of Archaeology and the Getty Conservation Institute, Los Angeles, California, March 23-27, 1992*. Getty Conservation Institute. 267–284.

[292]

Rehren, Th. 1996. Alchemy and fire assay - an analytical approach. *Historical metallurgy: journal of the Historical Metallurgy Society*. 30, 2 (1996), 136–142.

[293]

Rehren, Th. et al. 1997. Fourth millennium BC copper metallurgy in Northern Jordan: The evidence from Tell esh-Shuna. *The prehistory of Jordan, II: perspectives from 1997*. Ex Oriente. 625–640.

[294]

Rehren, Th. 2002. Ores from the ore washeries in the Lavriotiki. *Metalla: Forschungsberichte des Deutschen Bergbau-Museums*. 9, (2002), 27–46.

[295]

Rehren, Th. and Papakhristu, O. 2000. Cutting edge technology – The Ferghana Process of medieval crucible steel smelting. *Metalla: Forschungsberichte des Deutschen Bergbau-Museums*. 7, (2000), 55–69.

[296]

Rehren, Thilo and Mei, Jianjun 2009. Metallurgy and civilisation: Eurasia and beyond : proceedings of the 6th International Conference on the Beginnings of the Use of Metals and Alloys (BUMA VI). Archetype.

[297]

Renfrew, C. 1967. Cycladic Metallurgy and the Aegean Early Bronze Age. *American Journal of Archaeology*. 71, 1 (1967), 1–20.

[298]

Roberts, B. 2011. Ancient technologies and archaeological cultures: understanding the earliest metals in Eurasia. *Investigating archaeological cultures: material culture, variability, and transmission*. Springer. 137–150.

[299]

Roberts, B.W. et al. 2009. Development of metallurgy in Eurasia. *Antiquity*. 83, 322 (2009), 1012–1022.

[300]

Roberts, B.W. and Thornton, C.P. eds. 2014. *Archaeometallurgy in global perspective: methods and syntheses*. Springer.

[301]

Roger Matthews and Hassan Fazeli 2004. Copper and Complexity: Iran and Mesopotamia in the Fourth Millennium B.C. *Iran: journal of the British Institute of Persian Studies*. 42, (2004), 61–75.

[302]

Rohl, B. and Needham, S. 1998. Lead isotope and chemical composition variation in ores and metals. *The circulation of metal in the British Bronze Age: the application of lead isotope analysis*. British Museum. 3–8.

[303]

Rostoker, W. et al. 1989. Direct reduction to copper metal by oxide-sulfide mineral interaction. *Archeomaterials*. 3, (1989), 69–87.

[304]

Rostoker, W. et al. 1983. Melting/smelting of bronze at Isthmia. *Historical metallurgy: journal of the Historical Metallurgy Society*. 17, (1983), 23–26.

[305]

Rostoker, William and Bronson, Bennet 1990. Pre-industrial iron: its technology and ethnology. [*Archeomaterials*].

[306]

Rothenberg, B. 1990. Smelting furnaces and installations from the New Kingdom to the Early Islamic Period. *The Ancient metallurgy of copper: archaeology, experiment, theory*. Institute for Archaeo-Metallurgical Studies [and] Institute of Archaeology, University College, London. 8–73.

[307]

Rovira, S. 2005. Bronze production in prehistory.

[308]

Rovira, S. et al. 2004. Los Callejones: a Roman Republican iron mining and smelting centre in the south east of the Iberian Peninsula. *Historical metallurgy: journal of the Historical Metallurgy Society*. 38, 1 (2004), 1–9.

[309]

Ruiz-Taboada, A. and Montero-Ruiz, I. 1999. The oldest metallurgy in western Europe. *Antiquity*. 73, 282 (1999), 897–903.

[310]

Schmidt, Peter R. 1997. *Iron technology in East Africa: symbolism, science, and archaeology*. Indiana University Press.

[311]

Schultze, C.A. et al. 2009. Direct evidence of 1,900 years of indigenous silver production in the Lake Titicaca Basin of Southern Peru. *Proceedings of the National Academy of Sciences*. 106, 41 (2009), 17280–17283. DOI:<https://doi.org/10.1073/pnas.0907733106>.

[312]

Schultze, C.A. et al. 2009. Direct evidence of 1,900 years of indigenous silver production in the Lake Titicaca Basin of Southern Peru. *Proceedings of the National Academy of Sciences*. 106, 41 (Oct. 2009), 17280–17283. DOI:<https://doi.org/10.1073/pnas.0907733106>.

[313]

Schwab, R. et al. 2006. The provenance of iron artefacts from Manching: A multi-technique approach. *Archaeometry*. 48, 3 (Aug. 2006), 433–452.
DOI:<https://doi.org/10.1111/j.1475-4754.2006.00265.x>.

[314]

Scott, David A. 1991. Metallography and microstructure of ancient and historic metals. Getty Conservation Institute.

[315]

Segal, I. et al. 1998. Smelting slag from prehistoric Site F2 and N3 in Timna, SW Arabah, Israel. *Metallurgica Antiqua: in honour of Hans-Gert Bachmann and Robert Maddin*. Deutsches Bergbau-Museum. 223–234.

[316]

Serneels, V. 2017. The massive production of iron in the Sahelian belt: Archaeological investigations at Korsimoro (Sanmatenga – Burkina Faso). *Materials and Manufacturing Processes*. 32, 7–8 (Jun. 2017), 900–908.
DOI:<https://doi.org/10.1080/10426914.2016.1244842>.

[317]

Shackleton, W.G. 1986. Introduction and Chapter 1, Mineral deposits. *Economic and applied geology: an introduction*. Croom Helm. 1–18.

[318]

Shadreck Chirikure and Thilo Rehren 2004. Ores, Furnaces, Slags, and Prehistoric Societies: Aspects of Iron Working in the Nyanga Agricultural Complex, AD 1300-1900. *The African Archaeological Review*. 21, 3 (2004), 135–152.

[319]

Shennan, S. 1999. Cost, benefit and value in the organization of early European copper production. *Antiquity*. 73, 280 (1999), 352–363.

[320]

Shimada, I. et al. 1999. Sican alloying, working and use of precious metals: an

interdisciplinary perspective. Metals in antiquity. Archaeopress.

[321]

Sim, David and Ridge, Isabel 1998. Beyond the bloom: bloom refining and iron artifact production in the Roman world. Archaeopress.

[322]

Stanley B. Alpern 2005. Did They or Didn't They Invent It? Iron in Sub-Saharan Africa. History in Africa. 32, (2005), 41–94.

[323]

Starley, D. 1999. Determining the Technological Origins of Iron and Steel. Journal of Archaeological Science. 26, 8 (1999), 1127–1133.
DOI:<https://doi.org/10.1006/jasc.1999.0408>.

[324]

Stech, T. 1999. Aspects of early metallurgy in Mesopotamia and Anatolia. The archaeometallurgy of the Asian old world. Museum University of Pennsylvania. 59–71.

[325]

Stech, T. 1990. Neolithic copper metallurgy in South West Asia. Archeomaterials. 4, (1990), 55–61.

[326]

Stos-Gale, S. and Macdonald, C. 1991. Sources of metals and trade in the Bronze Age Aegean. Bronze age trade in the Mediterranean: papers presented at the Conference held at Rewley House, Oxford, in December 1989. Åstrom. 249–288.

[327]

Stos-Gale, Z.A. and Gale, N.H. 2009. Metal provenancing using isotopes and the Oxford

archaeological lead isotope database (OXALID). *Archaeological and Anthropological Sciences*. 1, 3 (Sep. 2009), 195–213. DOI:<https://doi.org/10.1007/s12520-009-0011-6>.

[328]

The Historical Metallurgy Society: <https://historicalmetallurgy.org/>.

[329]

Thibodeau, A.M. et al. 2007. The strange case of the earliest silver extraction by European colonists in the New World. *Proceedings of the National Academy of Sciences*. 104, 9 (2007), 3663–3666. DOI:<https://doi.org/10.1073/pnas.0607297104>.

[330]

Thilo, R. 2008. Metals: Chemical analysis. *Encyclopedia of archaeology*. ScienceDirect. 1614–1620.

[331]

Thilo, R. 2008. Metals: Chemical analysis. *Encyclopedia of archaeology*. ScienceDirect. 1614–1620.

[332]

Thornton, C.P. et al. 2009. The production of speiss (iron arsenide) during the Early Bronze Age in Iran. *Journal of Archaeological Science*. 36, 2 (2009), 308–316. DOI:<https://doi.org/10.1016/j.jas.2008.09.017>.

[333]

Thornton, C.P. and Ehlers, C. 2003. Early brass in the ancient Near East. *IAMS Newsletter*. 23 (2003), 3–8.

[334]

Timberlake, S. 2003. Early mining research in Britain: The Development of the last Ten

Years. Mining and metal production through the ages. British Museum. 22–42.

[335]

Timberlake, Simon and Mighall, Tim 2003. Excavations on Copa Hill, Cwmystwyth (1986-1999): an early Bronze Age copper mine within the uplands of Central Wales. Archaeopress.

[336]

Tylecote, R. F. 1987. The early history of metallurgy in Europe. Longman.

[337]

Tylecote, R.F. 1987. Forging and hammering techniques. The early history of metallurgy in Europe. Longman. 243–279.

[338]

Veldhuijzen, H.A. and Rehren, Th. 2007. Slags and the city: early iron production at Tell Hammeh, Jordan and Tell Beth-Shemesh, Israel. Metals and mines: studies in archaeometallurgy. (2007), 189–201.

[339]

Wagner, D.B. 2003. Chinese blast furnaces from the 10th to the 14th century. Historical metallurgy: journal of the Historical Metallurgy Society. 37, 1 (2003), 25–37.

[340]

Wagner, D.B. 2008. Science and Civilisation in China. Vol. 5: Chemistry and Chemical Technology. Part 11: Ferrous Metallurgy. Cambridge University Press.

[341]

Waldbaum, J. 1999. The coming of iron in the eastern Mediterranean. The archaeometallurgy of the Asian old world. University Museum symposium series, (1999),

27-57.

[342]

Wayman, M.L. and Duke, M.J.M. 1999. The effects of melting on native copper. The beginnings of metallurgy: proceedings of the International Conference 'The Beginnings of Metallurgy', Bochum 1995. Deutsches Bergbau-Museum. 55-60.

[343]

Weeks, Lloyd R. 2004. Early metallurgy of the Persian Gulf: technology, trade, and the Bronze Age World. Brill.

[344]

Weisgerber, G. and Yule, P. 2003. Al-Aqir near Bahla' - an Early Bronze Age dam site with planoconvex 'copper' ingots. *Arabian Archaeology and Epigraphy*. 14, 1 (May 2003), 24-53. DOI:<https://doi.org/10.1034/j.1600-0471.2003.00003.x>.

[345]

Welter, J.-M. 2003. The zinc content of brass: a chronological indicator. *Techne: La Science au Service de L'Histoire de L'Art Et des Civilisations*. 18, (2003), 27-36.

[346]

Wood, J.R. et al. 2017. Gold parting, iridium and provenance of ancient silver: A reply to Pernicka. *Journal of Archaeological Science*. (Aug. 2017). DOI:<https://doi.org/10.1016/j.jas.2017.07.005>.

[347]

Wood, J.R. et al. 2017. Iridium to provenance ancient silver. *Journal of Archaeological Science*. 81, (May 2017), 1-12. DOI:<https://doi.org/10.1016/j.jas.2017.03.002>.

[348]

Woodhouse, J. 1998. Iron in Africa: the metal from nowhere. Transformations in Africa: essays on Africa's later past. Leicester University Press. 160–185.

[349]

Wytttenbach, A. and Schubiger, P.A. 1973. Trace element content of Roman lead by neutron activation analysis. *Archaeometry*. 15, 2 (1973), 199–207.
DOI:<https://doi.org/10.1111/j.1475-4754.1973.tb00090.x>.

[350]

Yener, K. Aslihan 2000. The domestication of metals: the rise of complex metal industries in Anatolia. Brill.

[351]

Yener, K. Aslihan 2000. The domestication of metals: the rise of complex metal industries in Anatolia. Brill.

[352]

Yener, K.A. et al. 2003. Analyses of metalliferous residue, crucible fragments, experimental smelts, and ores from Kestel tin mine and the tin processing site of Goltepe, Turkey. *Mining and metal production through the ages*. British Museum. 181–197.

[353]

Young, S.M.M. and O'Brien, W. 1999. Arsenical copper in early Irish metallurgy. *Metals in antiquity*. Archaeopress. 33–42.

[354]

Young, T. 2011. Some preliminary observations on hammerscale and its implications for understanding welding. *Historical metallurgy: journal of the Historical Metallurgy Society*. 45, 1 (2011), 26–41.

[355]

Young, T. and Poyner, D. 2012. Two medieval bloomery smelting sites in Shropshire: the adoption of water power for iron smelting. *Historical metallurgy: journal of the Historical Metallurgy Society*. 46, 2 (2012), 78–97.

[356]

Zacharias, S. 1989. Brass making in medieval western Europe. *All that glitters: readings in historical metallurgy*. Metallurgical Society of the Canadian Institute of Mining and Metallurgy. 35–40.

[357]

Zangato, E. 2010. On the iron front: new evidence from North-Central Africa. *Journal of African Archaeology*. 8, (2010), 7–23.

[358]

Zhou, W. et al. 2012. Distilling zinc for the Ming Dynasty: the technology of large scale zinc production in Fengdu, southwest China. *Journal of Archaeological Science*. 39, 4 (Apr. 2012), 908–921. DOI:<https://doi.org/10.1016/j.jas.2011.10.021>.

[359]

Zhou, W. et al. 2009. New research on lost-wax casting in ancient China. *Metallurgy and civilisation: Eurasia and beyond : proceedings of the 6th International Conference on the Beginnings of the Use of Metals and Alloys (BUMA VI)*. Archetype. 73–78.

[360]

Zhou, W. et al. 2009. Three Western Zhou bronze foundry sites in the Zhouyuan are, Shaanxi province, China. *Metallurgy and civilisation: Eurasia and beyond : proceedings of the 6th International Conference on the Beginnings of the Use of Metals and Alloys (BUMA VI)*. Archetype. 62–72.

[361]

Zori, C. and Tropper, P. 2013. Silver lining: evidence for Inka silver refining in northern Chile. *Journal of Archaeological Science*. 40, 8 (Aug. 2013), 3282–3292. DOI:<https://doi.org/10.1016/j.jas.2013.03.020>.

[362]

2015. Archaeometallurgy: Guidelines for best practice. Historic England. Historic England.

[363]

2012. Ver un reduction des prejuges et la fonte des antagonismes: un bilan de l'expansion de la metallurgie du fer en Afrique sub-Saharienne. Journal of African archaeology. 10, (2012).