

Professor Stephen Bottomley

Head of School of Design



Surface Landing

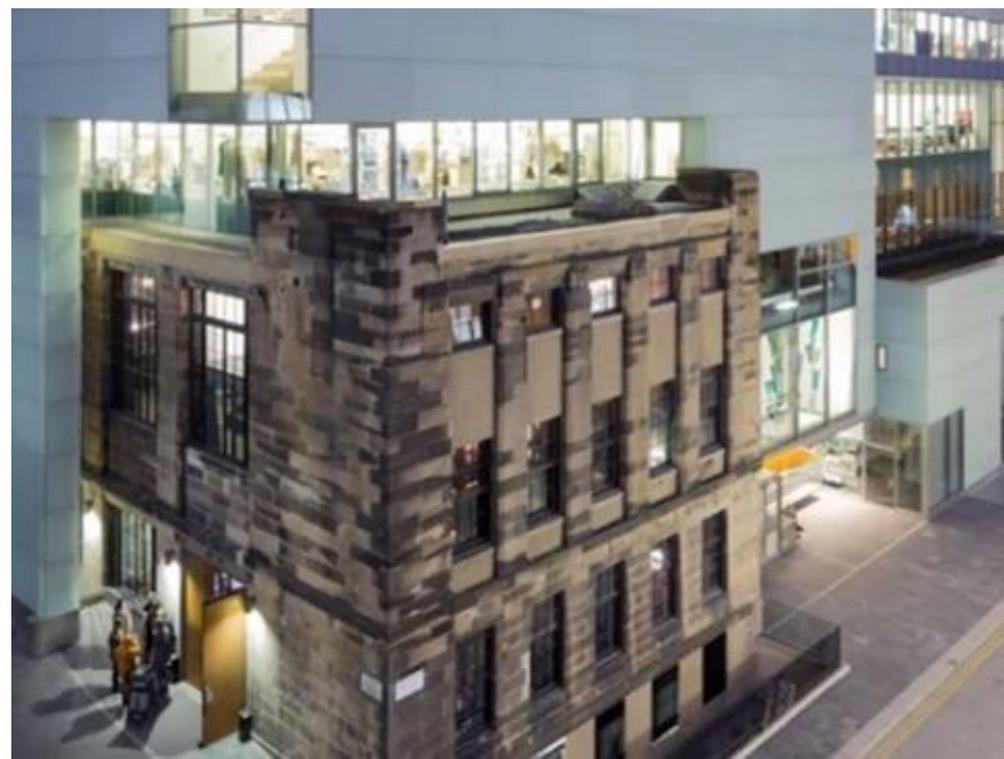
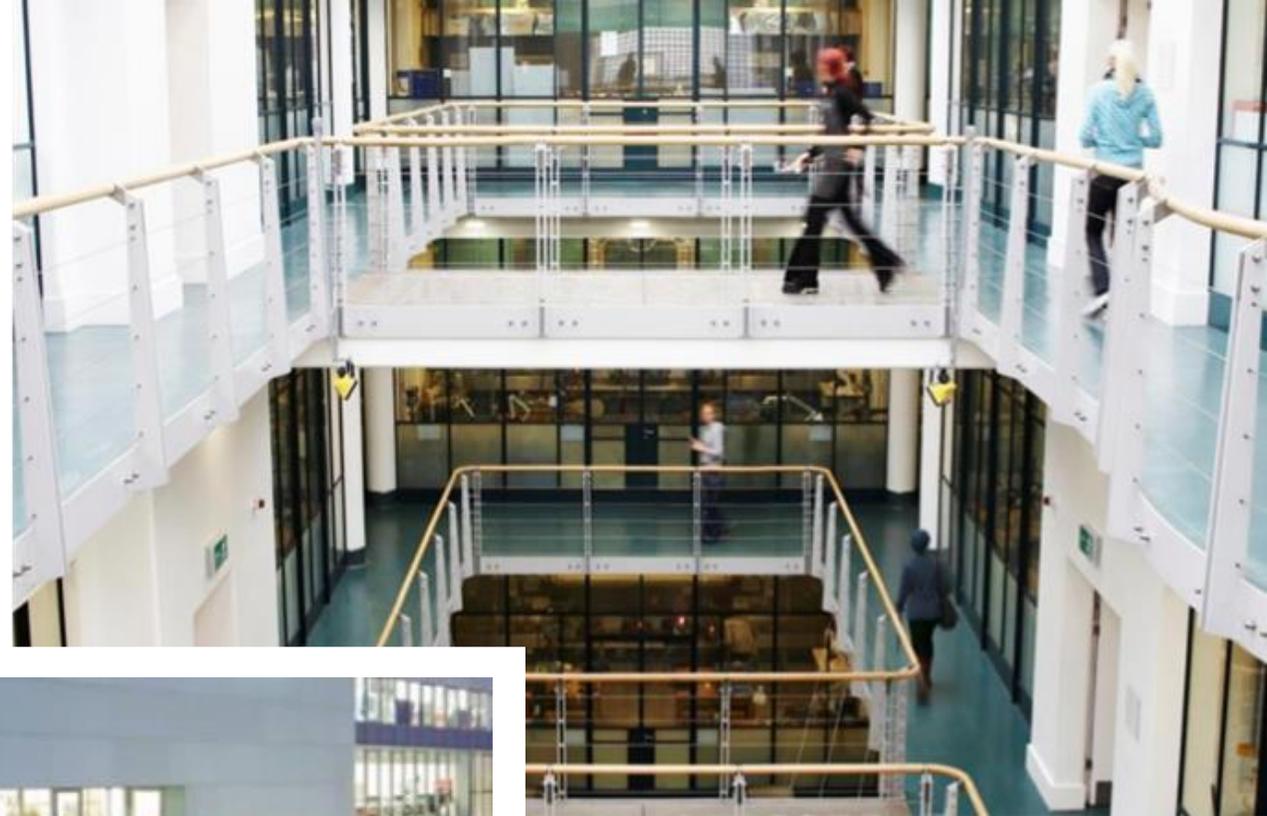
**THE GLASGOW
SCHOOL OF ART**



GLASGOW

SCOTLAND



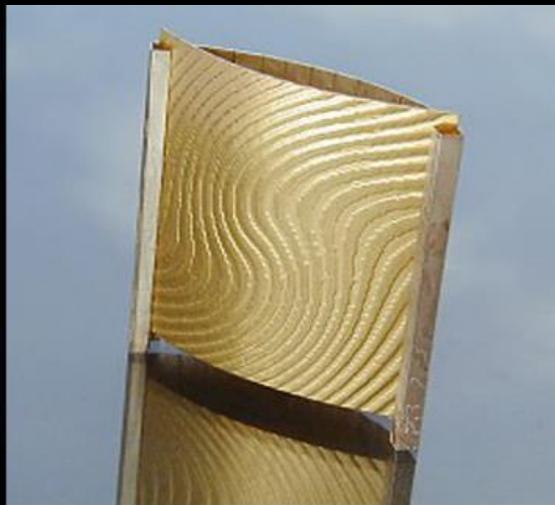




Rectangular Fan brooch,
Silver & Stainless Steel, 1988



Helix bangle, 1990
Silver & gold leaf on mesh



Frame Brooch, 1998,
18 carat gold
Collection of South East Arts , Hove Museum and Art Gallery



Ruff Necklace, 1998
Sterling silver
Private collection USA



Orbit Ring, 2001

CAD drawing
from rapid prototype



Star badge, 2001
Steel and enamel
(detail)



Golden Square, 2012,
Silver, gold and enamel
National Collection of
Museums of Scotland, Edinburgh



Stellar Pendant
2014
Copper, silver, enamel, rubber
and diamond dust

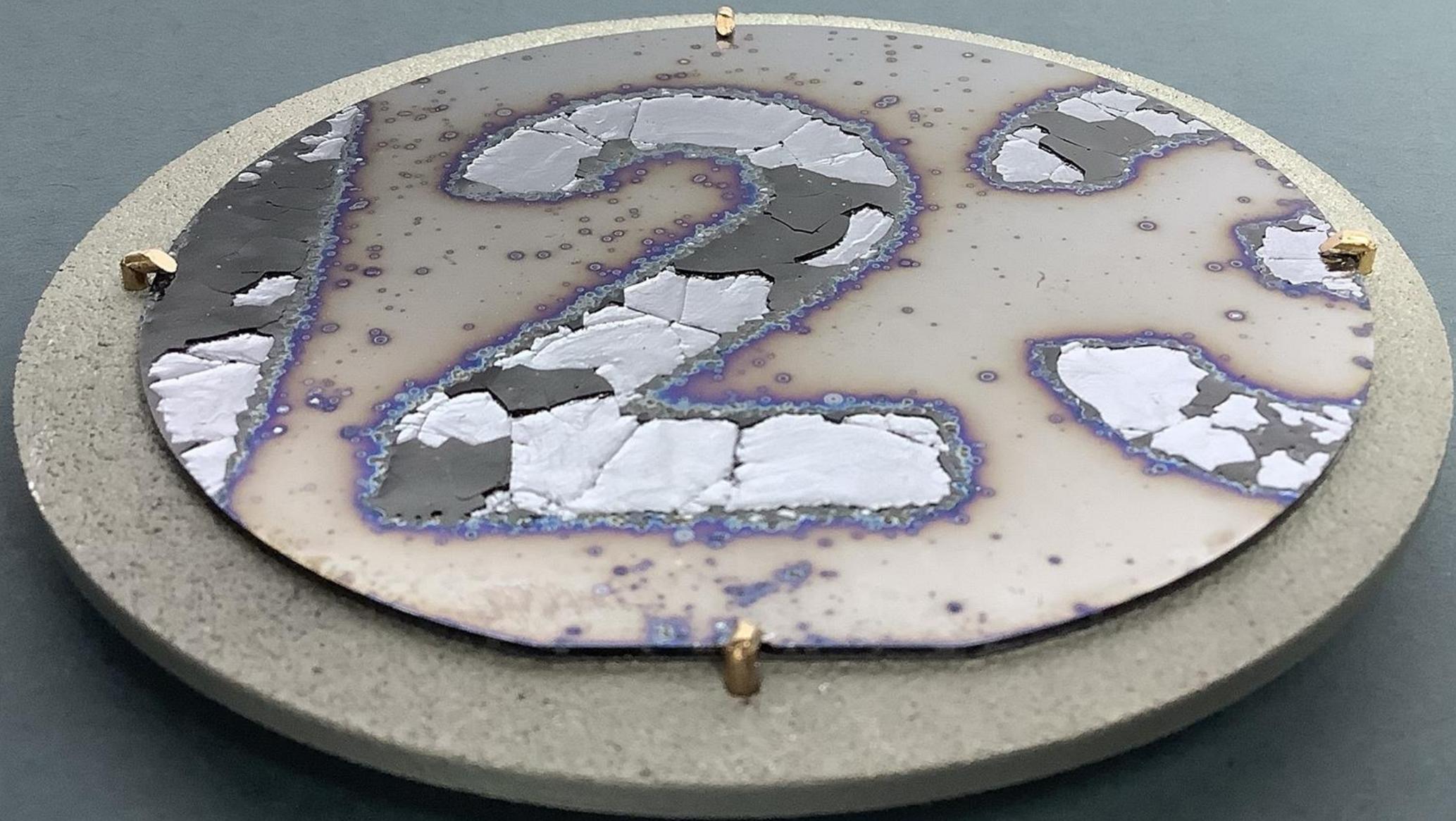
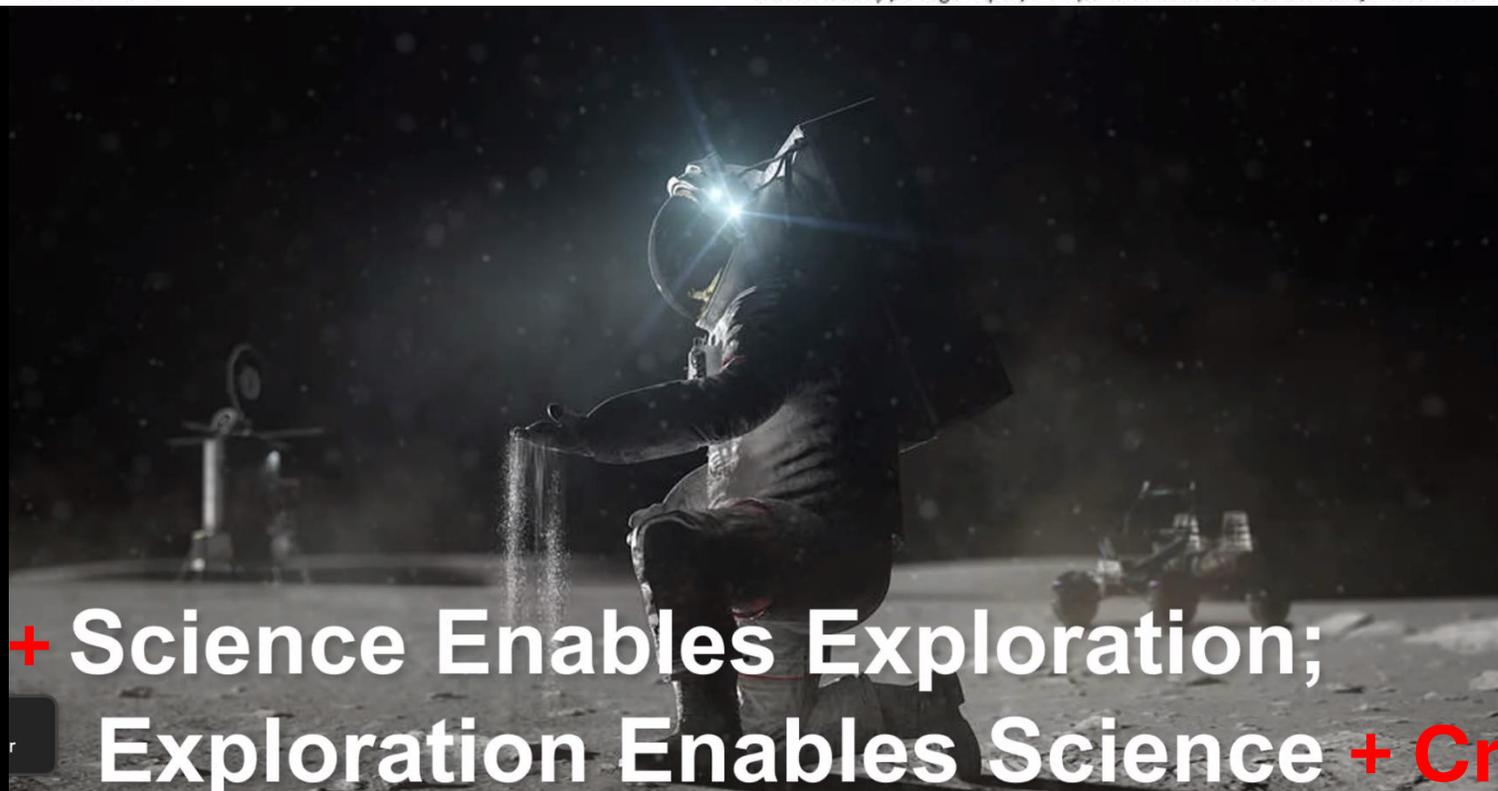




Photo: USPS

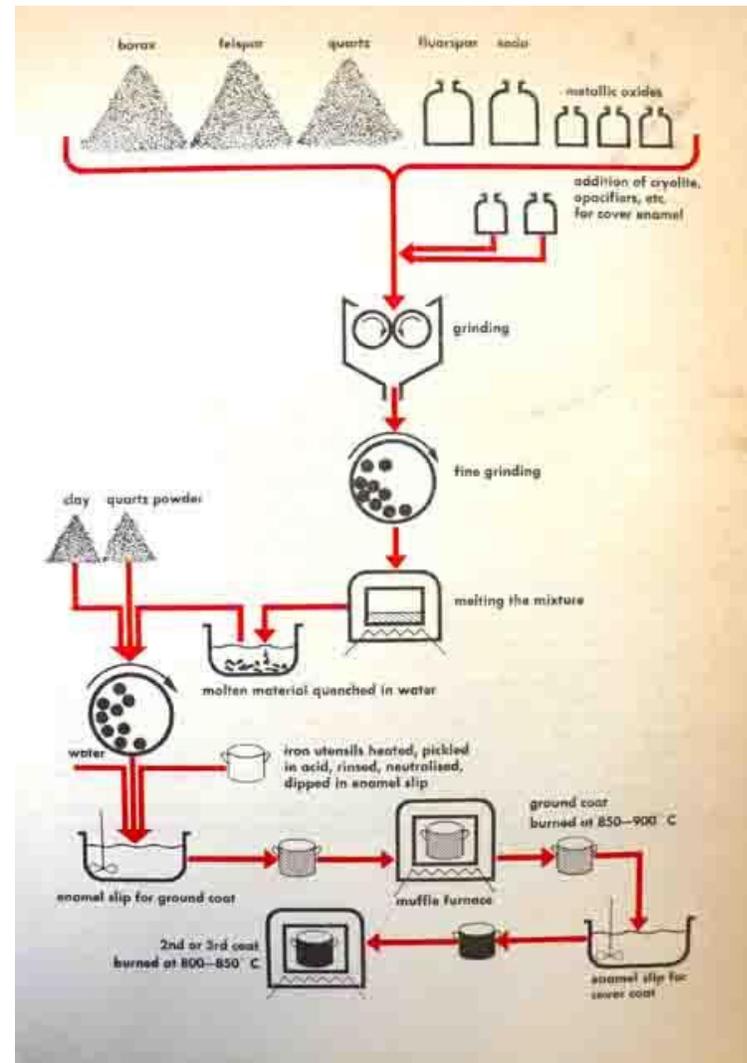


S. Bottomley, firing Drapes, UWE, enamel research centre 2007, Photo E Turrell



Creativity + Science Enables Exploration;
Exploration Enables Science + Creativity

The STEM bit....Science , Technology , engineering and Maths



Vitreous enamel is also known as porcelain enamel or glass metal.

This metal/ceramic/glass combination allows the end product to share the Best properties of each material.

It offers the possibilities of metal combined with a glassy, corrosion resistant skin that is fireproof.

This material used since ancient times is still evolving and developing with the advent of new technologies and challenges

How Things Work 1: The Universal Encyclopedia of Machines Paladin

E.Turrell 2022

Elizabeth Turrell and Stephen Bottomley in her studio in Bristol

Glassy flints and silica sand



Galettes of enamel made in France in the 1860s



Lump enamel ready for grinding



Colour is made by the additions of metallic oxides and salts e.g.: blue - cobalt oxide, and arsenic, yellow - antimony acid and silver oxides, green - cupric oxides, chromium oxides, red - gold chloride, cuprous oxide, purple - cobalt oxide and manganese dioxide, black, combination of ferric, chromium, cobalt, and cupric oxides, brown - ferric chloride, manganese carbonate.

Examples of Industrial and Jewellery enamel



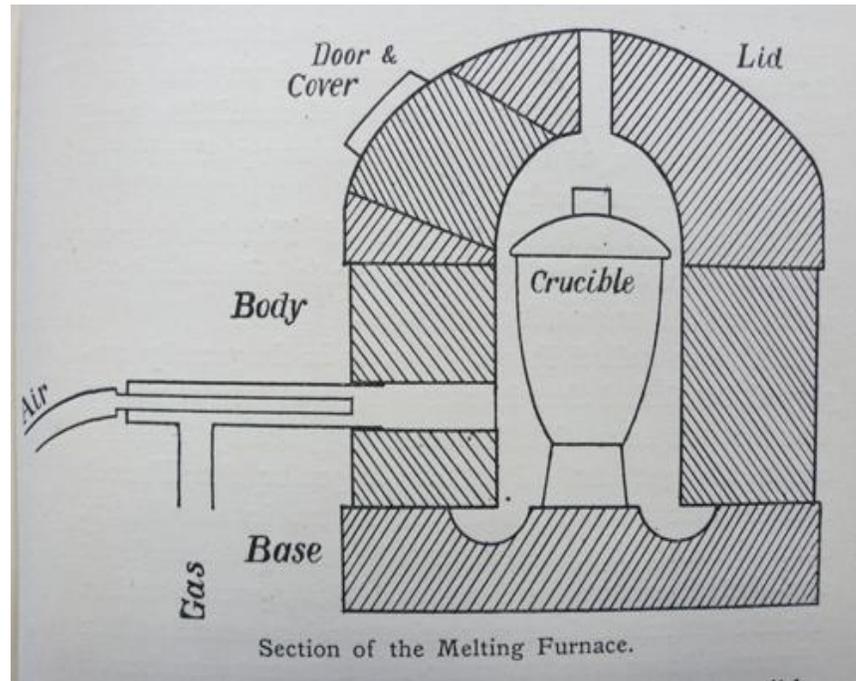
Top: Industrial or wet-process enamel - application can be by spraying, pouring or brushing

Bottom: Enamel 'frits' before the milling process to create wet process/industrial or slip enamel



Jewellery enamels for sifting or wet packing

Furnaces: Making small quantities of jewellery enamel



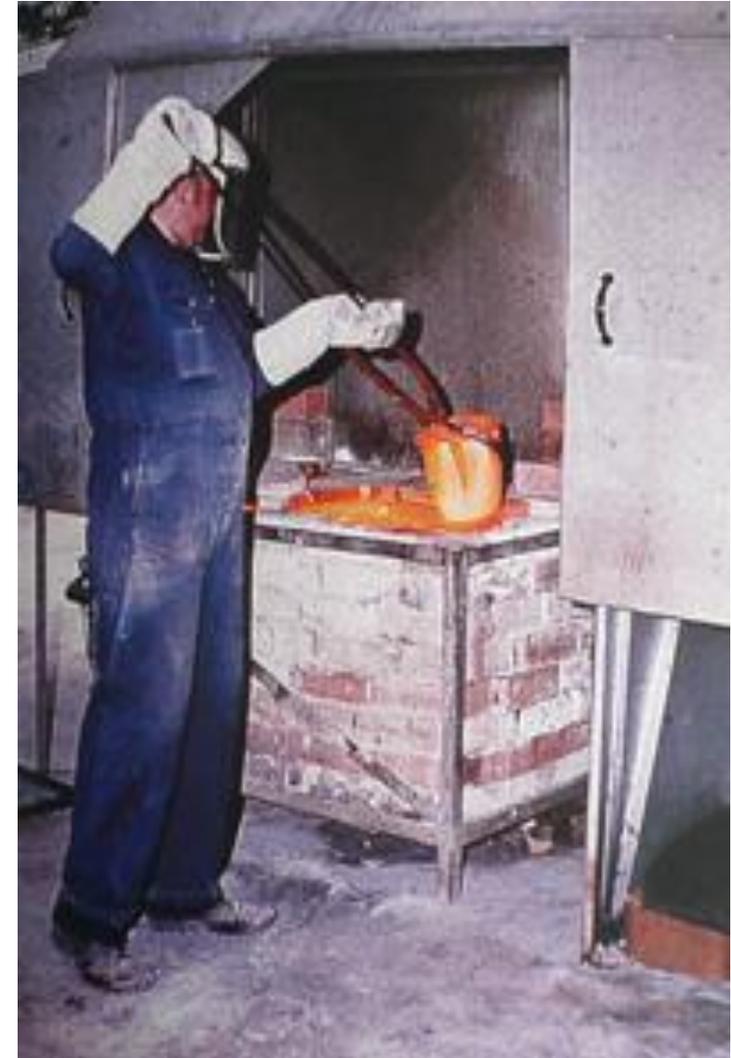
Plan of a 'melting' furnace

19th century recipe for flux (clear glass)
for copper and gold

4 parts silica, 6 parts minimum, 12 parts
nitrate of potash

or 4 parts optical glass, 3 parts
minimum, 6 parts nitrates of potash

Minium: Red lead/ oxide of lead

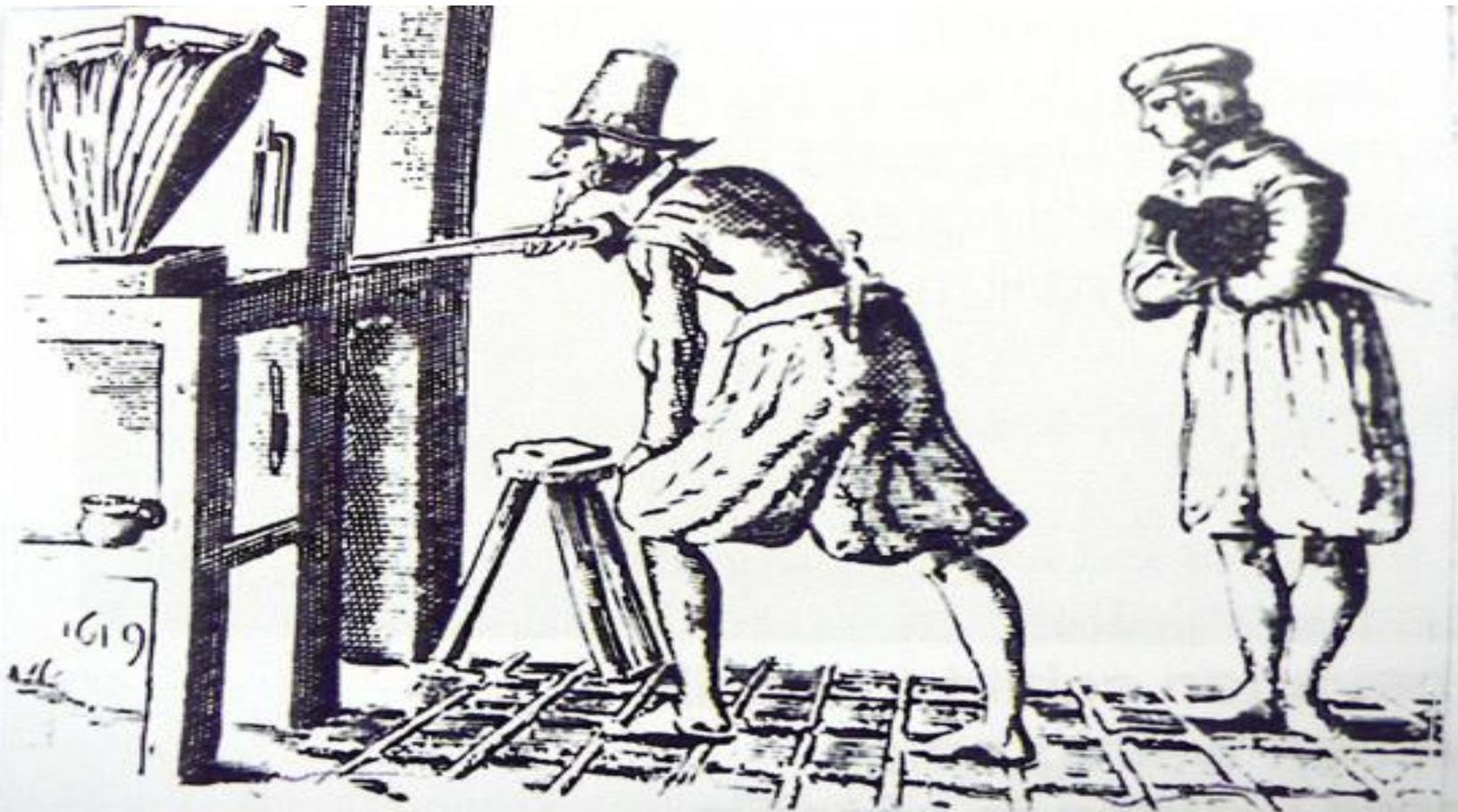


Removing the crucible the melted
ingredients of enamel from the
furnace

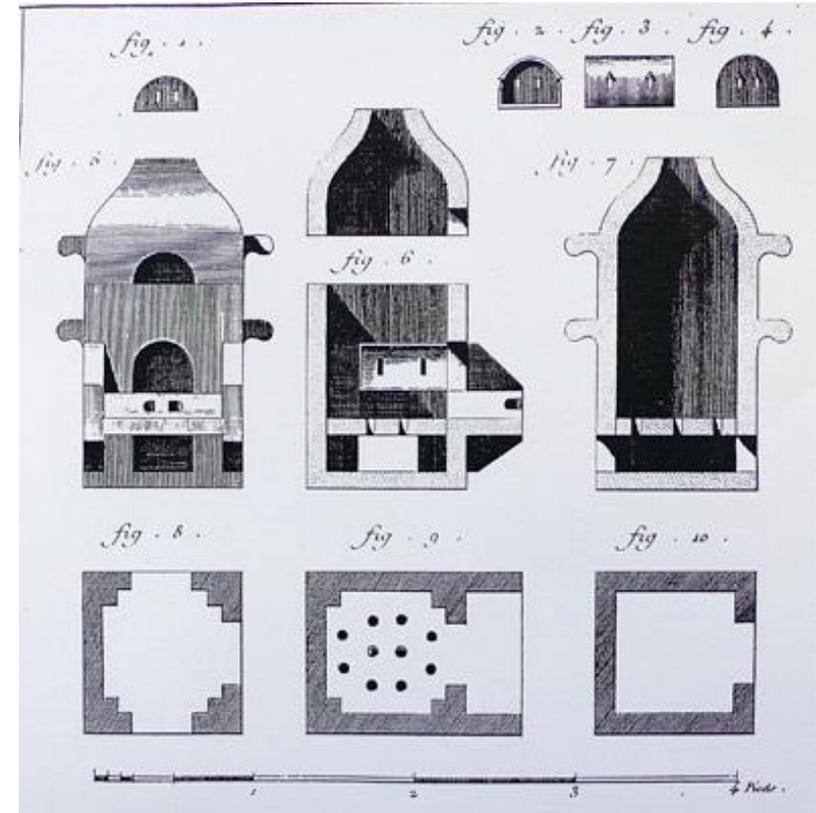


Milton Bridge enamels, Stoke, UK
Pouring a new batch of
transparent Red enamel 2018



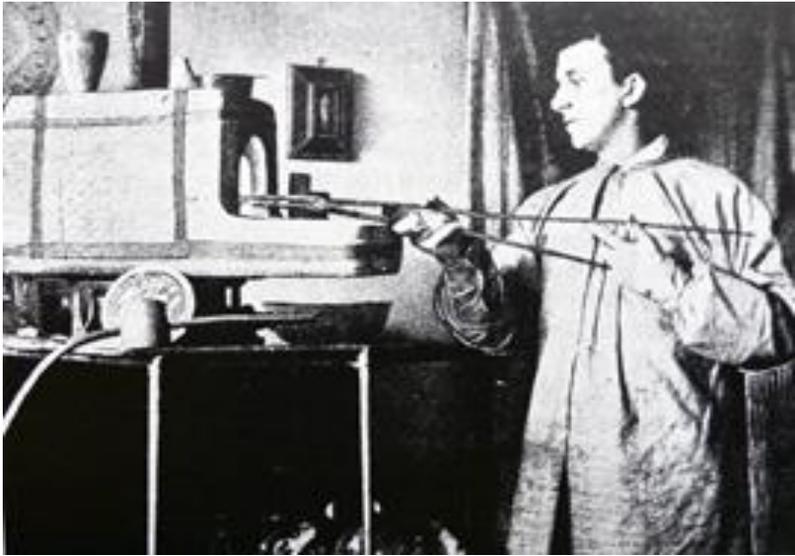


Dutch Enamelling in the 17th Century
Gravure van Jean Toutin 1619 vit "Le portrait miniature"
Published by Frits Lugt 1917. P.N. van Kampen & fils Amsterdam



Plans of an enamelling
furnace

Coke enamelling furnace from the 1900s



Enamel kiln - coke fired
collection Museum der
Arbeit Hamburg
Germany

Ernestine Mills Arts and Craft artist and
suffragette (1871-1959)

Gas Enamelling Furnaces 1900s CW Plucknett & Co Ltd

GAS ENAMELLING FURNACES.



See Catalogue for Prices.

# s. d.	# s. d.
One pair each snipe and round nose pliers	0 1 10
Engravers' point	0 0 6
3 scrapers and handles	0 0 6
Set enamellers cabinet saucers	0 1 6
One each 4 in. half-round and three square files	0 0 10
1/2 doz. assorted Needle Files	0 0 5
Depositor Hammer, handled	0 1 0
Planishing	0 1 0
Corundum File	0 0 8
Pair Furnace Tongs	0 1 0
Saw Frame and 1 Dozen Saws	0 1 0
Pestle and Mortar	0 1 0
Total 2 3 3	

GAS ENAMELLING FURNACES.



See Catalogue for Prices.

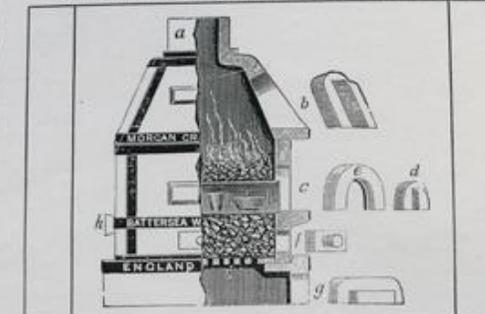
ENAMELLING FURNACES IN STOCK OF EVERY DESCRIPTION

C. W. Plucknett & Co Ltd. 29-30 Poland str. London W. 00

Examples of Outfits for Enamellers and Jewellers, Useful for seeing cost of necessary Tools.

No. 1.	# s. d.	No. 2.	# s. d.
No. 20 Furnace, adjustable	£ 10 0	No. 1. Gas Soldering Burner or Spirit Lamp	0 1 0
in any tube		Compassion Chemical	0 1 0
Portable Vice for Bench	0 0 6	Archimedes drillstock and drills	0 1 0
Blowpipe, Small, Brass plate and handle, necessary	0 1 0	One pair shears	0 1 0
		One pair straight shears	0 1 0

COKE ENAMELLING FURNACE.



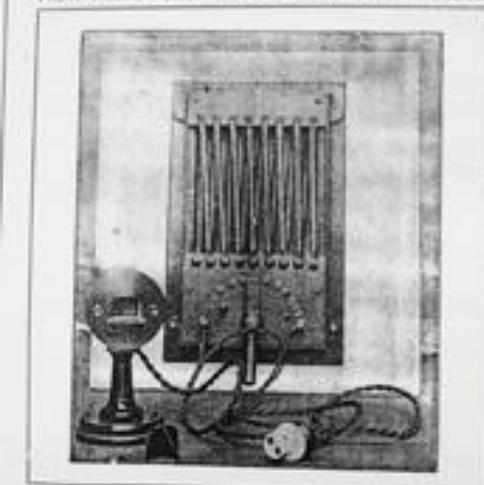
See Catalogue for Prices.

Call and see Furnaces of all Makes or send for full Catalogue.

C. J. Plucknett & Co. Ltd. 29-30 Poland str. London W. 0

No. 3.	# s. d.	No. 4 D.	# s. d.
No. 4 D New Pattern, Economical Draught Muffle Furnace	3 15 0	1 D. Assorted Chasing Punches	0 5 0
Portable Work Bench on Stand	0 16 0	1 Chasing Hammer, handled	0 1 0
No. 9 Inge. Parallel Bench Vice	0 6 0	1 Planishing Hammer, handled	0 1 0
P. C. L. 6 in Bellows	0 12 0	Pestle and Mortar, 3 1/2 in.	0 1 6
C. 10, Type B Blowpipe	0 8 0	Nest of Enamellers' Saucers	0 1 0
About 3 yards Fish, Tube hot same	0 7 0	Ground Glass, Moller and Stub	0 1 0
No. 1 Gas Burner	0 2 0	Falstaffs Knife	0 0 0
Mouth Blowpipe, Borax Salt, Borax Brushes, Tweezers	0 1 2	3 in. Round Tumbler	0 2 0
F. W. D. Charcoal	0 0 10	3 in. Hand Vice	0 2 0
Binding Wire, 2 sizes	0 0 5	Revolving Soldering Pan 10 in. Small Soldering Pan and Flux	0 5 0
One Pair Dividers	0 1 0	Horn and Bussing Mallet	0 2 0
One Saw Frame and Saws	0 7 0	Furnace Tongs	0 1 0
One Upright Drillstock with 2 Chucks and Drills	0 3 0	Drossing Hook, Brass	0 4 0
One Pair of Shears	0 1 0	Quint Trigonum	0 0 0
Round Hole Drawplate and Tongs	0 3 0	Bottle Spike, Oil of Lavender	0 1 0
One Engravers' Point	0 0 6	1/2 oz. each, Best and Common Silver Solder	0 2 0
4 Assorted Scorpias and Gravers	0 1 0	1/2 lb. Pure Cup. Sheet for Enam.	0 1 0
3 Pairs Assorted Files	0 2 0	1 sq. Fine Silver Sheet, price Incl.	0 2 0
4 Assorted Large Files	0 1 0	Fine Silver Cloisonne Wire	0 1 0
6 Assorted Needle Files, Large	0 0 9	Total 27 7	

NEW ELECTRIC FURNACE FOR ENAMELLERS.

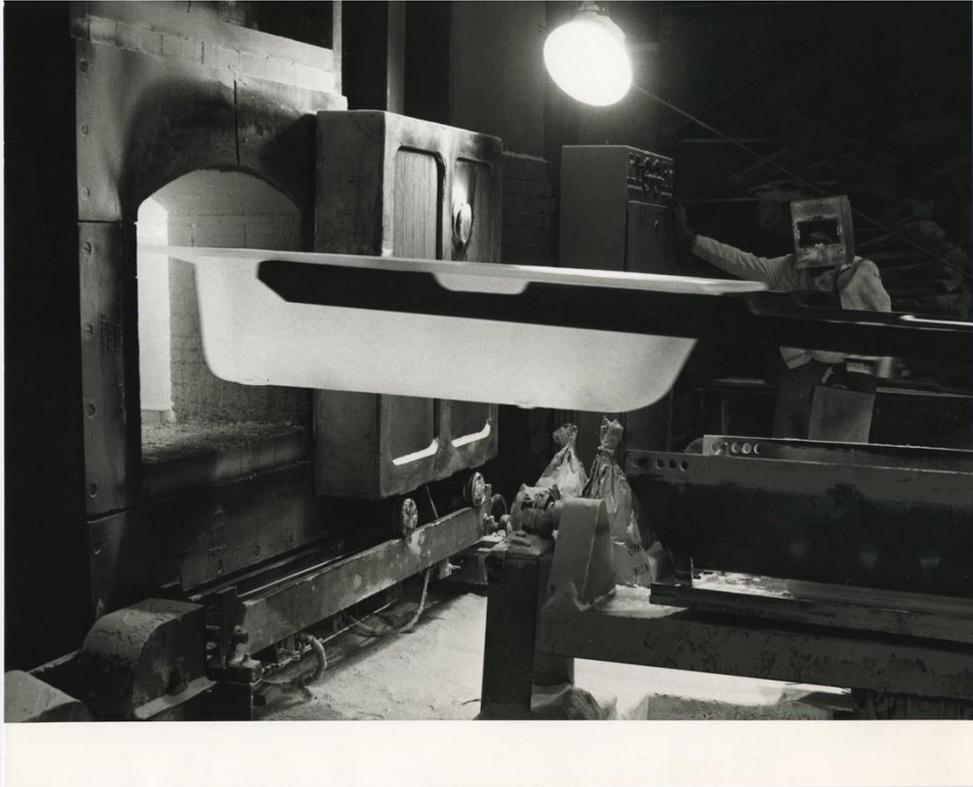


See Catalogue for Prices.

No. 3.	# s. d.	No. 4.	# s. d.
No. 30 Hot Water Furnace	3 5 0	No. 4 Assorted Tongs and Handles in One Block Silver Fork, One Field (Steel)	0 0 0
One Piece Bench 20 in. by 14 in. with 2 inch legs and one	0 4 0	Handed Glass, with and handle	0 1 0
No. 1 Improved Furnace portable	0 4 0	Head of Translucent Cup Saucers (one pair of Furnace Tongs)	0 1 0
No. 2 Gas Soldering Burner or Spirit Lamp	0 1 0	1 Pair Assorted Files	0 1 0
Brushes, Borax, Borax plate and handle	0 1 0	One Pair of Shears	0 1 0
Compassion Chemical, Large	0 1 0	Hand Planing & Saw, hot and cold	0 1 0
No. 3 Glass Plate Saucers	0 1 0	4 Assorted Large Files	0 1 0
One Engravers' Point and handle	0 1 0	1/2 lb. Pure Cup. Sheet for Enam. Price	0 1 0
Assorted Straight Drillstock with Drills	0 1 0	1/2 lb. Assorted Enamellers' Furnace	0 1 0
Assorted Wire Drawplate, 10 pieces	0 1 0	Chasing Hammer	0 1 0
One Pair Dividers	0 1 0	Compassion File	0 1 0
Gas Engravers' Point	0 1 0	Penalty and Needle 2 in.	0 1 0

No. 2 Double, Price 4 11 0

Enamelling Baths



THE LUSTRON HOME

No other house at any price has features like these

The Lustron Home is the result of American industrial and engineering "know-how" applied for the first time to home building.

It is made of porcelain enameled steel... the strength of steel and the permanent colorful beauty of porcelain, inside and out.

It is built in a factory to give you the benefits of volume production and dimensional precision. It is an engineered home, far removed from the technician of hammer and nails. It represents the results of years of effort to develop efficient, low-cost, mass-produced homes.

Your choice of colors, in beautifully subdued shades, opens up an entirely new concept of color harmony in home design and decoration. You get greater variety and practically unlimited blending possibilities with the new Lustron Home.

You never need to repaint, redecorate, or reroof. Sunlight, salt water, or chemical fumes cannot fade or stain finish.

Heated by radiant panels. Lustron's radiant panel heating system is the most advanced of its type. Soothing, even rays of heat are radiated from the ceiling. No radiators, no grilles, no circulating currents of warm, dust-carrying air.

These construction features alone put the Lustron Home far in advance of any other home available today.

And the beauty is an average American family can afford it. If you make \$20 to \$30 a week, you can buy a Lustron Home—a better home than you probably ever dreamed you could own.



THE LUSTRON HOME—A NEW STANDARD FOR LIVING

Site—Five spacious rooms, plus large utility room—total of more than 1,200 square feet.

Design—follows growing trend toward contemporary ranch-style architecture. Choice of colors for interior and exterior, all in non-glossy finish porcelain enameled steel.

Finishes—drip-proof, decay-proof, rust-proof, termites-proof, vermin-proof, earthquake-proof. Your only cleaning materials are soap, water, and a damp cloth.

Installation—The Lustron Home will be shipped fully furnished to licensed builder-dealers. It can be erected on the site in three to four days, from completion of foundation to putting key in front door.

Features included in delivered price: combination dishwasher-clothes-washer, automatic water heater, automatic heating unit, exhaust fan, built-in cabinets, cupboards, "closet walls," bookcase, dressing table. All you need to buy is your own cooking stove and refrigerator and, of course, your own furnishings.

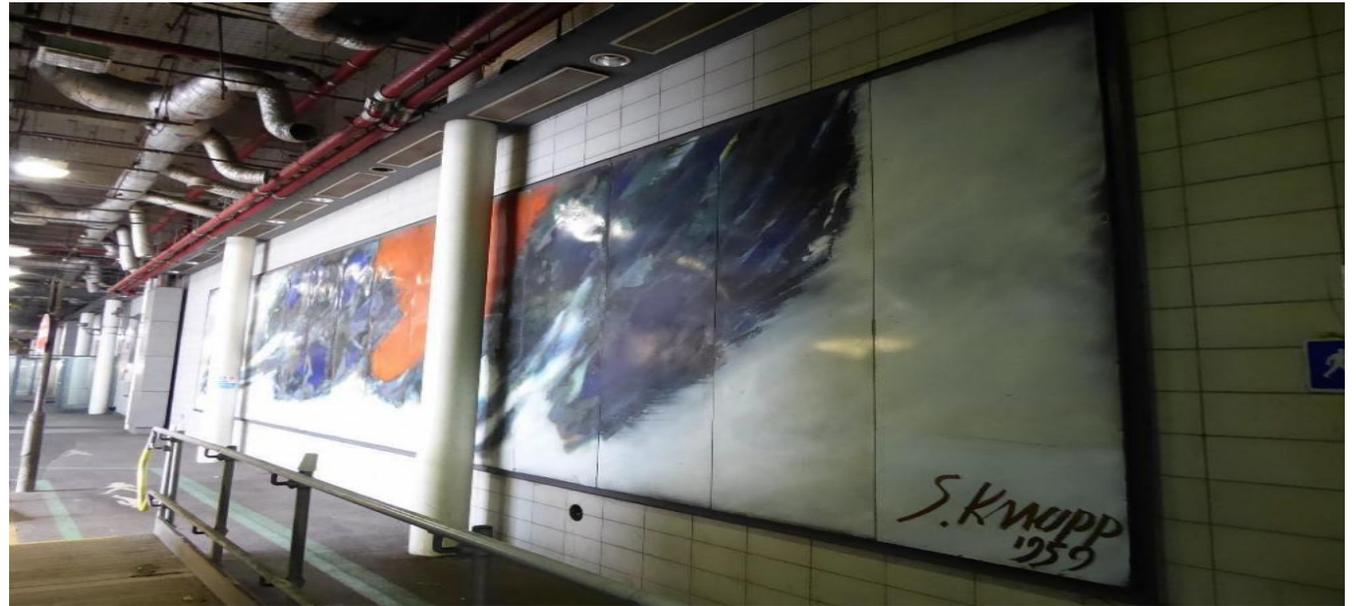
LUSTRON CORPORATION, Box 2013A, Columbus 16, Ohio



Lustron Homes 1949 -1950 USA

Made of steel coated with porcelain enamel, Lustron Homes were manufactured like cars and transported across the USA





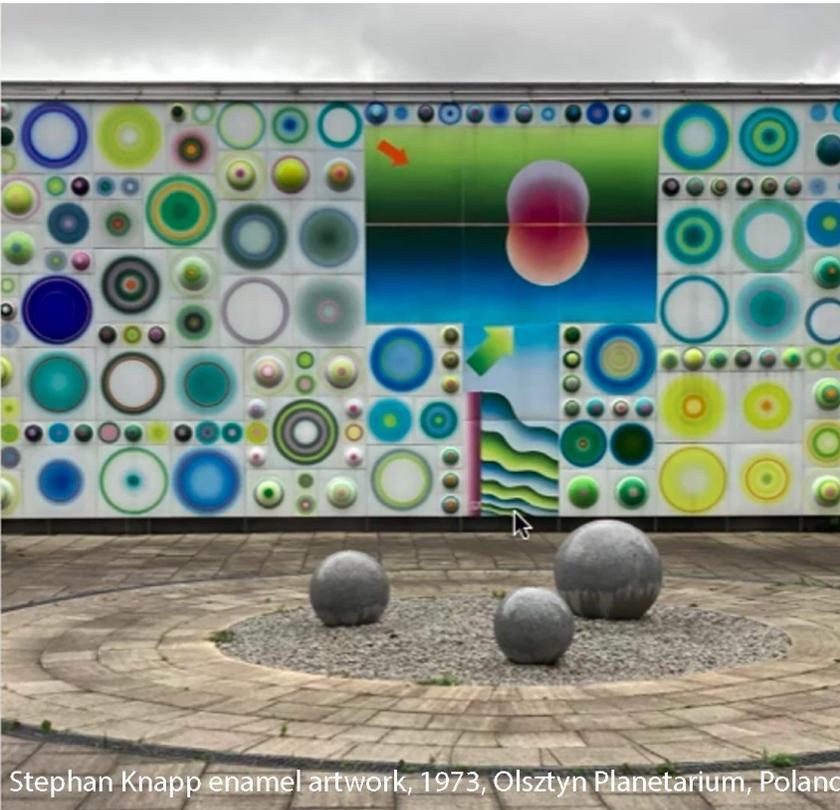
Heathrow Terminal 1, 1959

The art of painting with enamels on steel in architecture: context, development and conservation and the work of Stefan Knapp (1921-1996)

PhD researcher Cátia Weslowska

Supervisors: Dr Anne Marie Carey, Dr Sian Hindle and Professor Stephen Bottomley

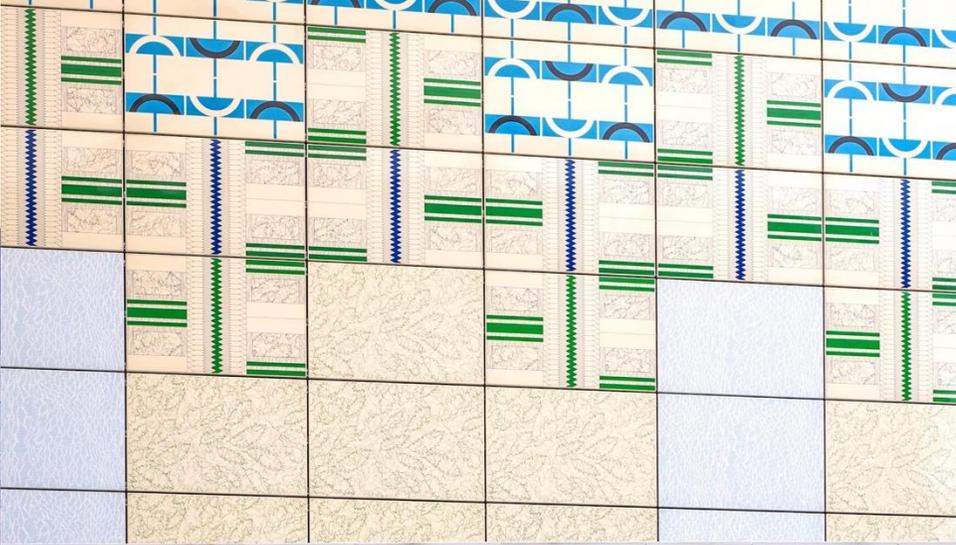




Stephan Knapp enamel artwork, 1973, Olsztyn Planetarium, Poland



A J Wells Factory showroom June 2022





Art and Industry enamel symposium, 2022, Glasgow School of Art
(left to right)
David Gatrell, Senior Commercial Manager, A J Wells & Sons
Cátia Weslowska, PhD student,
Stephen Bottomley
Yinglong Li , PhD student



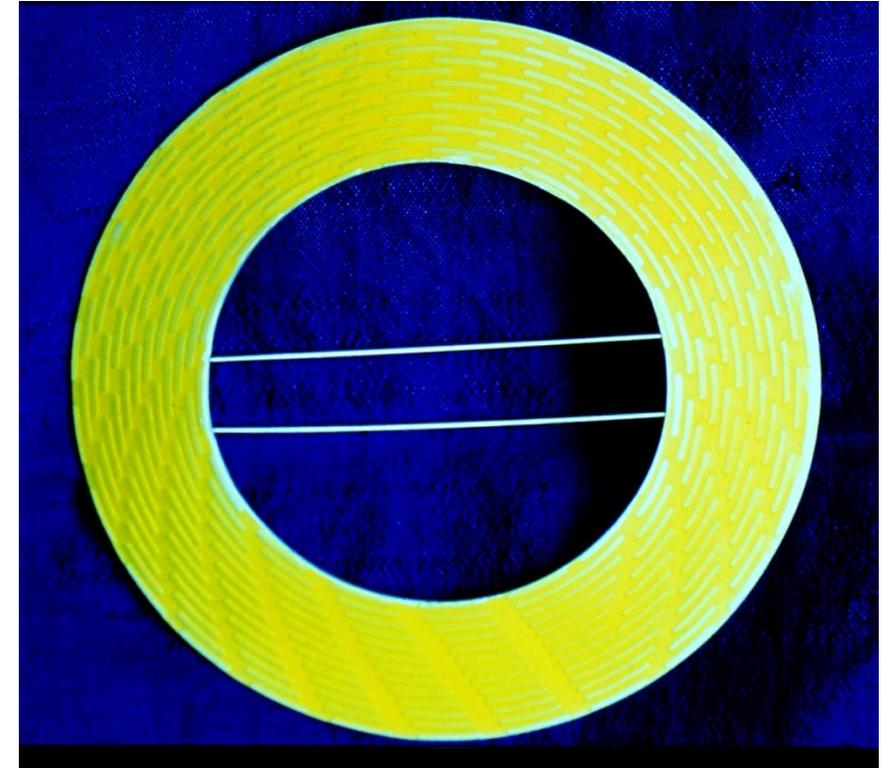
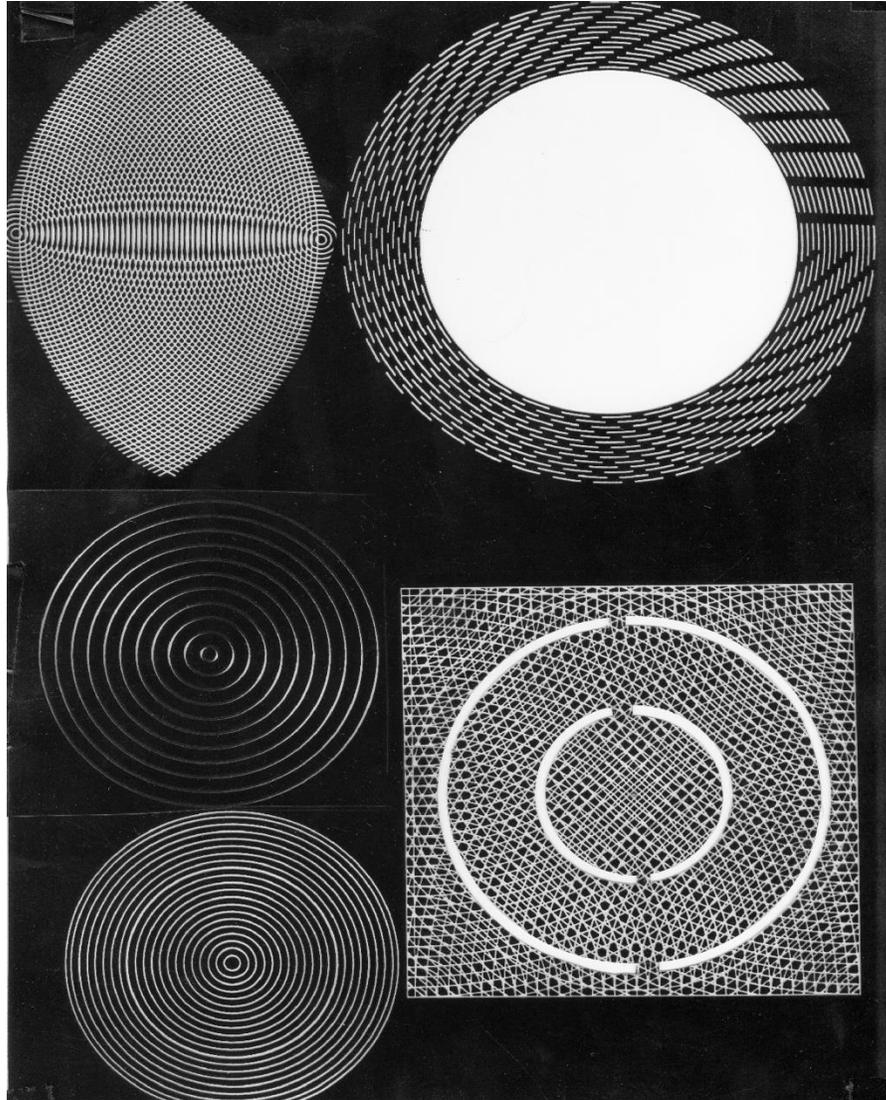
Figure 128. The opening of "MTG Crown" before being applied with enamels (left), after being applied with enamels (right).



Figure 127. Filling the gaps between the metal spheres with different coloured enamels.

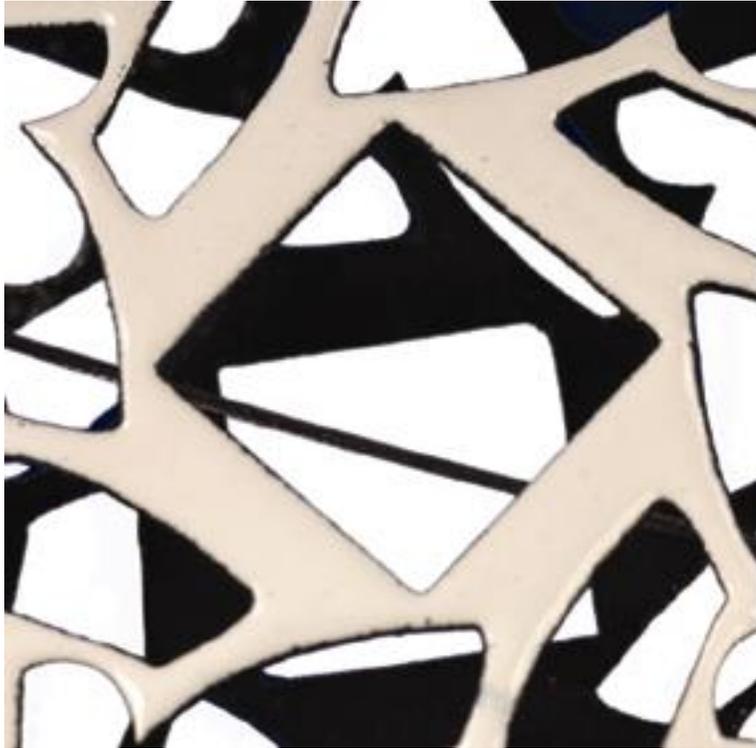
PRAXIS. “Design is iterative, interactive and a social process best undertaken in real-world situations”
(Schön in Wallace et al 2013)

1996 – 1999 MA (Design) UoB



Yellow brooch, 1999
Silver and enamel
70mm Diameter

Photo tools, ink on acetate



“The preservation of the asymmetry of Fortuny’s patterns in the finished jewellery is particularly effective and clever. The effect of the small imperfections on the metal (purposely achieved by Fortuny in his fabrics as a result of great experimentation) permeates it with an almost undetectable sensation that eliminates the possibility of a trivial relation between materials and drawing”



Visiting artist 2006-10 UWE
Bower Ashton Campus
Sifting the enamel, Vitreous
enamel research center



Yellow Drape Necklace
(Yellow Drape
Necklace, 2008
Steel and enamel
Photo: John K McGregor
Exhibited Playing with Fire 2008-10





Tech-Tile Exhibition, Hove Museum and Art Gallery
 Blue Oval necklace *Drape series*, 2007, Steel and enamel, 330 x 265, Photo SEB

Playing With Fire poster, catalogue produced by Devon Guild of Craftsmen, UWE and the British Society of Enamellers 2008

SU
RE

of enamel works and an online
by Elizabeth Turrell (UK), Beate
and Melissa Cameron (Australia).

with 23 international artists to develop
exhibition on an on-line forum to encourage
cross-fertilization of ideas and approaches to
enamel.

attempted to fuse diamond dust to vitreous
not possible on sheet metal, due to the
of cooling and shrinking of meta, enamel and
ion.

aerospace industry has developed familiar
the highly uniform structures that allow for the
endable exchange of heat and energy. This
modern reinvention of familiar base
through new material science as super
for space rockets and aircraft engines.

the most challenging environments
research a stable fusion of
surfaces.



heat exchange
a cross-continental survey of enamel

curators - Elizabeth Turrell, Beate Gegenwart, Melissa Cameron

Australia	Barbara Ryman Inari Kiuru Katrina Tyler Kirsten Haydon Melissa Cameron Naoko Inuzuka
Germany	Agnes von Rimsha Astrid Keller Beate Gegenwart Christine Graf Young-I Kim
UK	Catherine Fairgrieve Elizabeth Turrell Helen Carnac Jessica Terrell Kirsty Sumerling Stephen Bottomley
USA	Amy Tavern Arthur Hash Gretchen Goss Heejin Hwang Kathleen Browne Susie Ganch

shemer art center & museum
may 3rd - 30th, 2012

opening reception: may 3rd, 7 - 9pm

5005 east camelback road, phoenix, arizona 85018

tuesday - saturday: 10:00am - 3:00pm
thursday evenings: 6:30 - 8:30pm
closed sunday, monday and national holidays

Through an ongoing discourse mediated by a website, an international group of artists sought to replicate the transfer of energy found in thermal exchange systems, wherein no direct contact between media is made yet an effective transfer of energy is sustained.

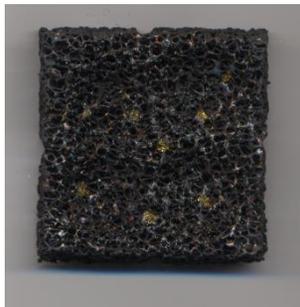
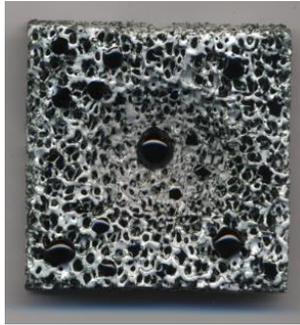
This exhibition is a result of this heat exchange.



heat-exchange.crimsoncactus.net



Heat Exchange: Test pieces

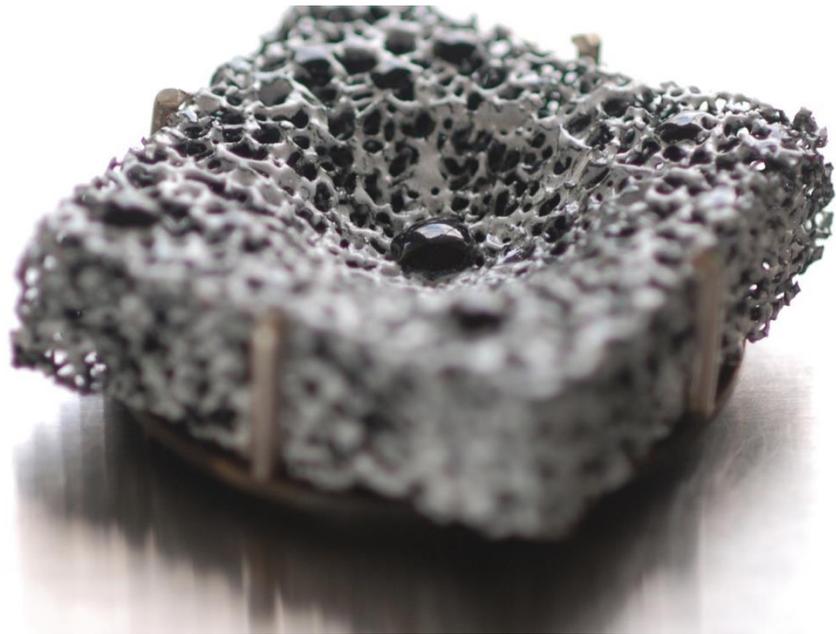


Samples

Copper foam, vitreous enamel and diamond dust

Shemer art gallery, Phoenix,
Arizona, USA:
Kunstmuseen der Stadt Erfurt,
Galerie Waidspeicher im
Kulturhof Krönbacken,
Germany
Museum Voor Vlakglas,
Ravenstein, The Netherlands
Kunstmuseen der Stadt Erfurt,
Galerie Waidspeicher im
Kulturhof Krönbacken
Craft in the Bay, Wales





Black on Black

An international jewellery exhibition celebrating the colour black

An exhibition by 17 jewellery artists from 10 countries, curated by Jo Bloxham

20 June – 9 October 2015

Open Monday – Sunday, 10am – 5pm
Late night opening on Thursday until 9pm

**Manchester
Art Gallery**

Mosley Street, Manchester, M2 3JL
0161 235 8888
manchestergalleries.org

 MANCHESTER
CITY COUNCIL

Black And White Heat Exchanger, 2012 Silver, precious metal, copper, enamel and diamond dust
Moss Brooch, Silver, copper, enamel and rubber Photos Shannon Tofts





Davit Alexander
 Marianne Anderson
 Jivan Astfalck
 Stephen Bottomley
 Tim Carson
 Rachael Colley
 Bettina Dittlmann
 Christine Graf
 Joohee Han
 Kirsten Haydon
 Jeremy Hobbins
 Michael Jank
 Bridie Lander
 Anna Lorenz
 Sarah O'Hana
 Drew Markou
 Toni Mayner
 Simone Nolden
 Jo Pond
 Jo Pudelko
 Rebecca Steiner
 Elizabeth Turrell

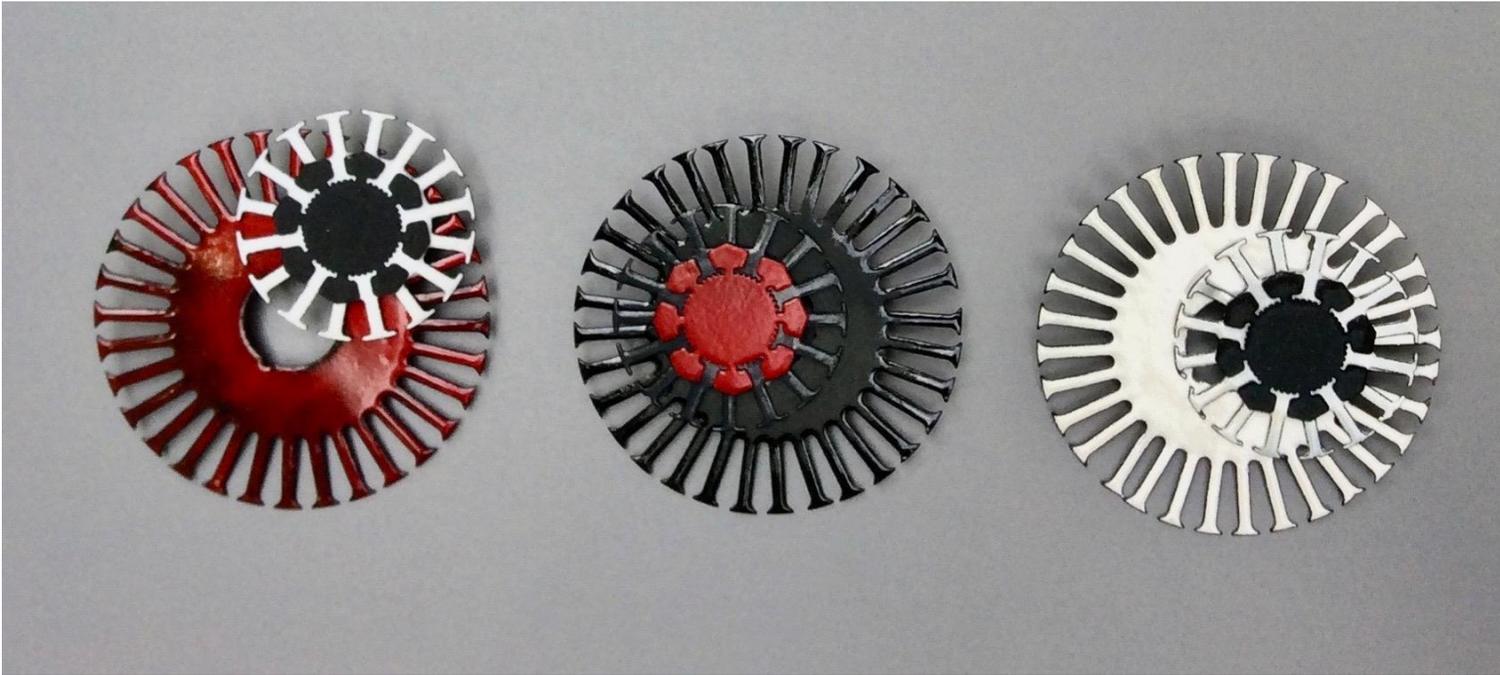
21st February - 17th March
 2019
 Museum Reich der Kristalle
 Mineralogische
 Staatssammlung München
 Theresienstraße 41, 80333
 München, Germany

1st April - 18th April 2019
 Vitt Street Gallery
 School of Jewellery
 Birmingham City University
 B1 3PA, United Kingdom



FERROCITY





Elizabeth Turrell. Title: *Widget*. 3 Brooches/Badges

Materials: *found* steel with vitreous enamel & iron spangles
90mm Diam



Stephen Bottomley

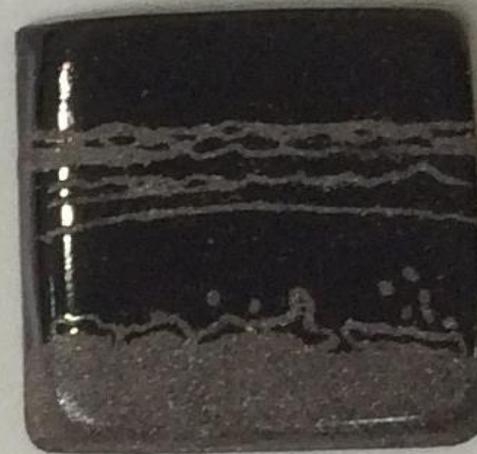
2018

Title: *Watchers*,

Enamel on recycled steel watch cases.

(Image of the exhibition at BIFT 2019)





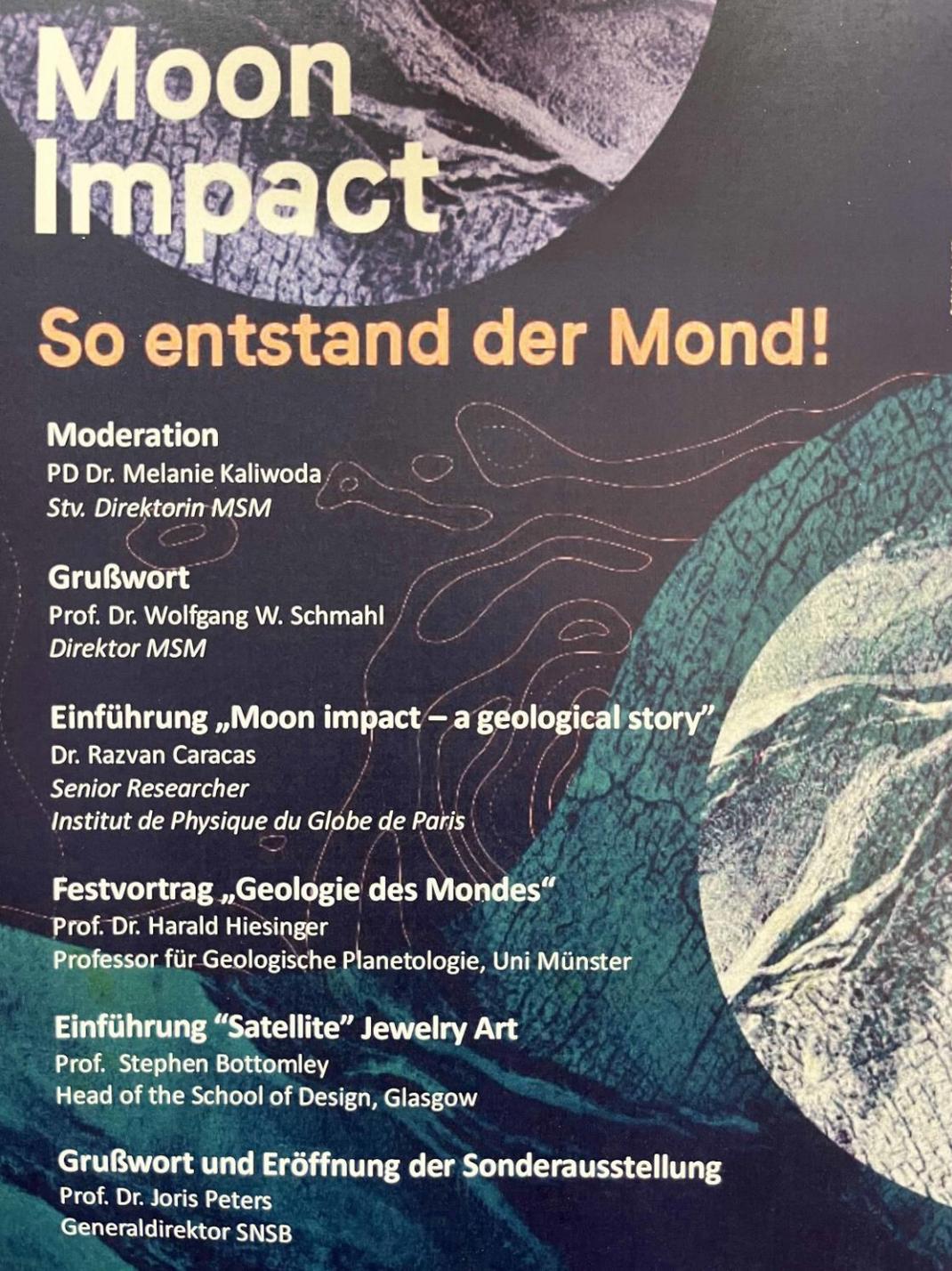
Kirsten Haydon

Iron scapes

Brooches

Mild steel, enamel, stainless steel, Kariotahi iron sand
55x55x7mm Approx





Moon Impact

So entstand der Mond!

Moderation

PD Dr. Melanie Kaliwoda
Stv. Direktorin MSM

Grußwort

Prof. Dr. Wolfgang W. Schmahl
Direktor MSM

Einführung „Moon impact – a geological story“

Dr. Razvan Caracas
Senior Researcher
Institut de Physique du Globe de Paris

Festvortrag „Geologie des Mondes“

Prof. Dr. Harald Hiesinger
Professor für Geologische Planetologie, Uni Münster

Einführung “Satellite” Jewelry Art

Prof. Stephen Bottomley
Head of the School of Design, Glasgow

Grußwort und Eröffnung der Sonderausstellung

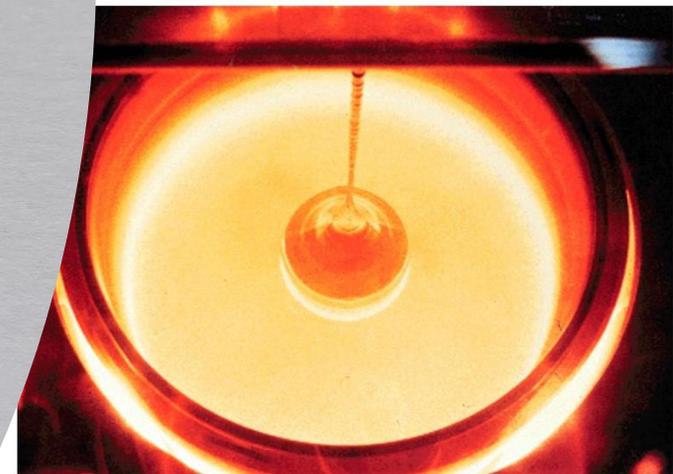
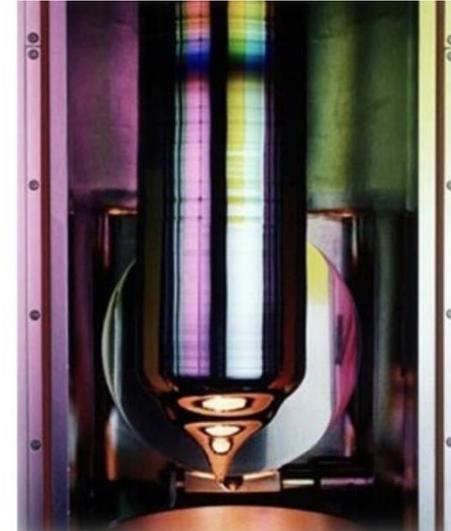
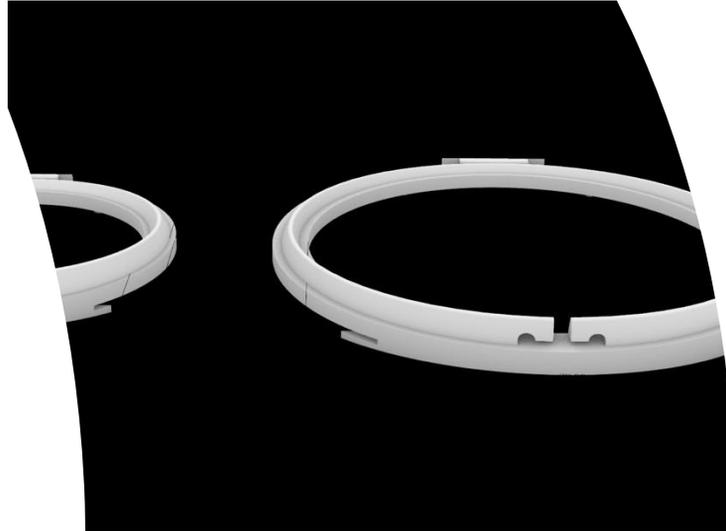
Prof. Dr. Joris Peters
Generaldirektor SNSB



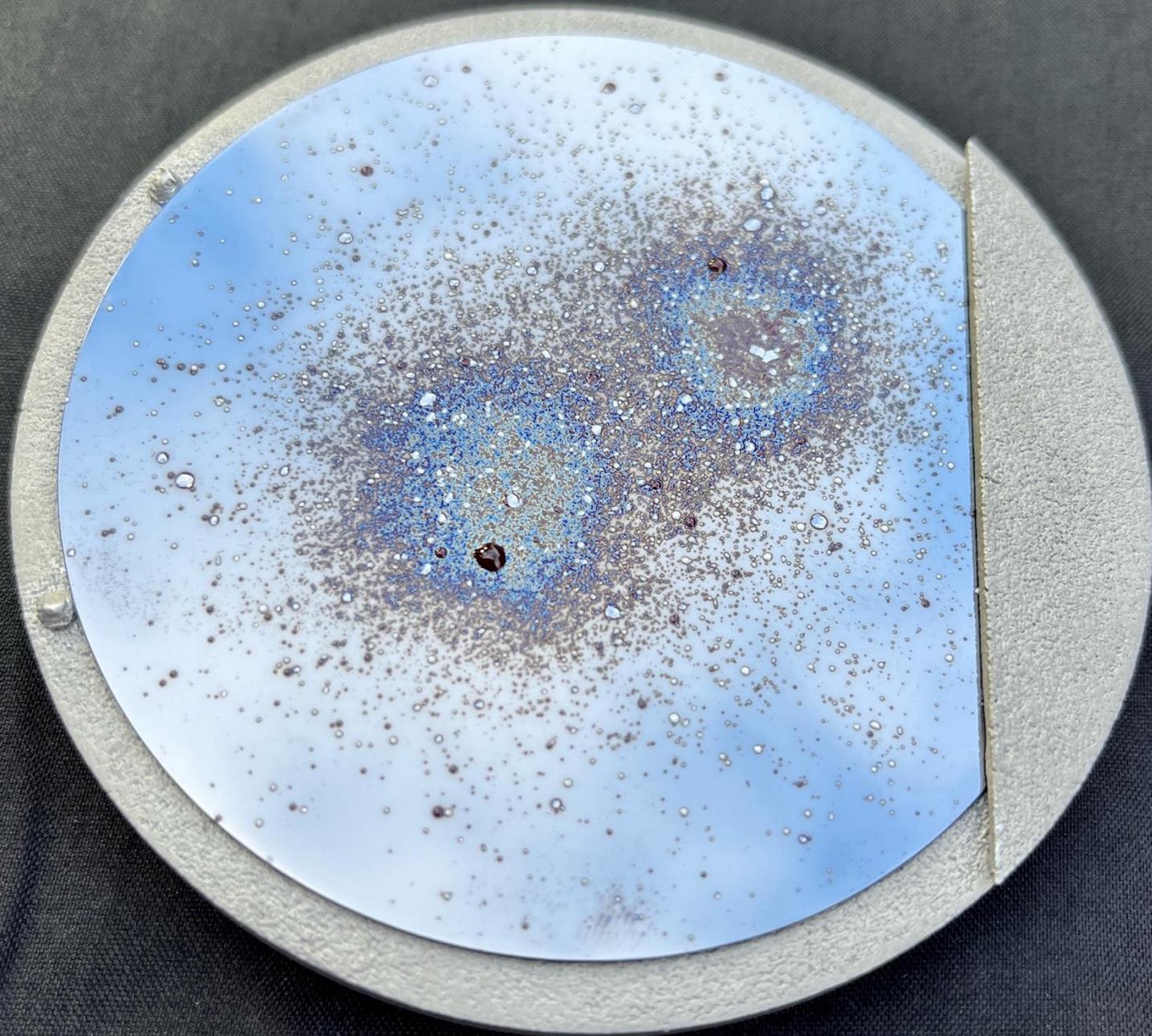
Bottomley
‘Collider’ 2023 brooch,
Silicon, Enamel, Aluminium, Steel



'Collider' 2023
brooch,
Silicon, Enamel, Aluminium, Steel







"Look beneath the surface; let not the several quality of a thing nor its worth escape thee"

Marcus Aurelius 170AD