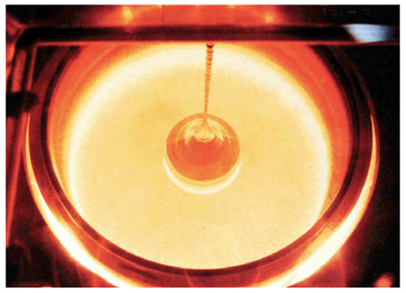
# G2 / 55.86584

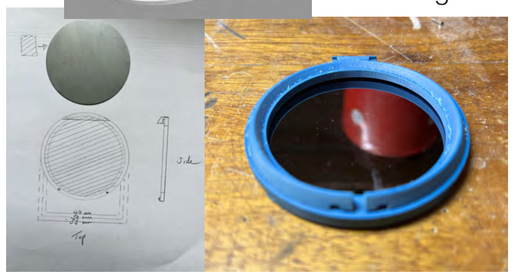
## Brooch, 2023, Enamel, Aluminium, Silica, Gold, Silver & Steel, 88mm Diam  x 9mm



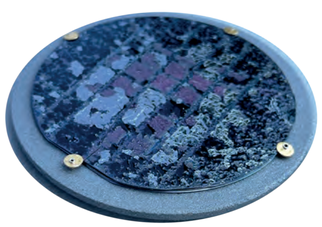
**Drawing the Silicon Ingot**
An ingot is being drawn from a furnace containing molten silicon. *(Image courtesy of Texas Instruments, Inc.)*

**An Ingot Plant**
At a Silicon Valley Microelectronics plant, the ingots are "grown" in these cylinders. SVM makes the ingots and slices them into wafers for their customers. *(Image courtesy of Silicon Valley Microelectronics, Inc., www.svmi.com)*

**The Pulled Ingot**
This is a finished ingot ready for slicing into wafers. *(Image courtesy of Silicon Valley Microelectronics, Inc., www.svmi.com)*



(left)  Design work: CAD rendering. Drawings. Wax 3D proto-type print with Silica lens
(right)  Sintered Aluminium brooch with stencilled enamelled silica lens. Test piece 01. Brooch with textile thread and wire stencils and original city map. All images by  Stephen Bottomley




**Artists Statement**
Bottomley was born in 1967, two years before the Apollo 11 Moon landing. The space age has remained a constant and steady influence from the emergence of computer design to digital manufacture alongside the wider cultural influences of science fiction.  A fusion of low-tech and high-tech processes and material thinking is the halmark of work that blurs interdisciplinary boundaries.  Bottomley combines traditional Goldsmithing techniques with contemporary synthetic materials, which are now part of what is termed the new 'Anthropocene', but were not available when these craft techniques were first developed.

**G2 / 55.86584** is the postcode and geographical location of Glasgow centre.

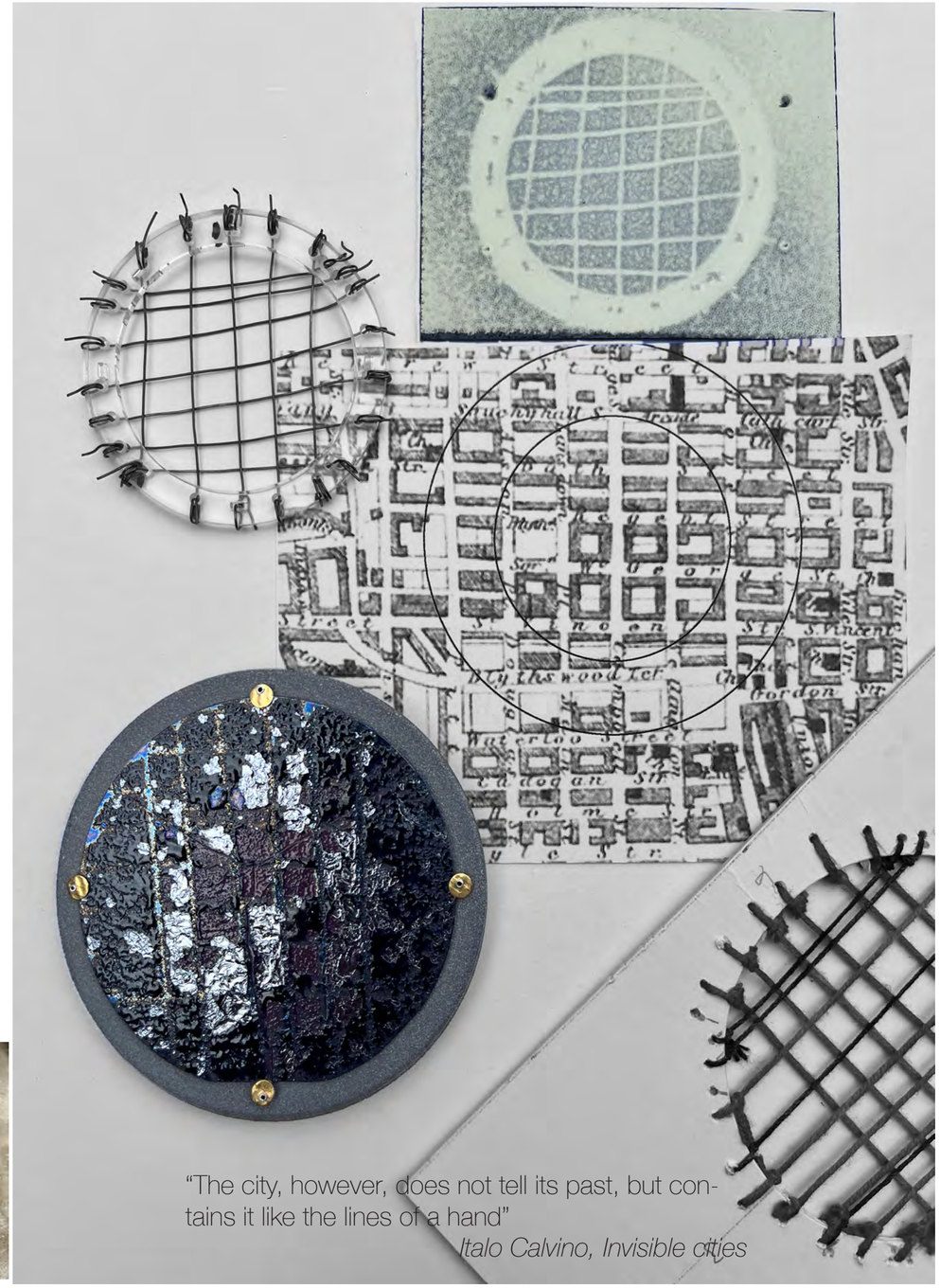
Glasgow's famous grid layout emerged on the Blythswood lands, bounded by Sauchiehall Street to the north and Argyle Street to the south, as shown on maps by the architect James Gillespie in 1820.

**Materials:**

**Silicon**
Silicon is one of the most common elements on Earth and makes up 90% of the Earth's crust.  It is second in mass only to oxygen and can be found in any quartz crystal. Beach sand is largely silicon and sand is the main constituent of glass production with soda ash and limestone. Silicon is also crucial to the the electronics industry.
Theses silica discs are  produced in by melting silicon powder into cylindrical ingots. These are then sliced into wafer like discs that can be later printed with rectangular circuits by robots in vacuum laboratory conditions.  These discs are made in Munich, Germany for semi-conductors and part of a worldwide chip industry worth $500 billion.

**Vitreous enamel**
Vitreous enamel (aka porcelain enamel) is a smooth, glassy, and durable surface made to be fused to a metal substrate at temperatures over 800°C.
A craft heritage material, enamel has many positive attributes and is used for a wide range of applications, from the decorative arts, to cookware, baths, signage and architectural cladding.
Vitreous enamel is made by smelting naturally occurring minerals, such as raw silica, feldspar, borax, soda ash, and sodium fluoride . Ceramic enamel frits contain finely ground glass mixed with inorganic pigments to produce a desired colour.

**Aluminium**
Aluminium is the third most common chemical element on our planet after oxygen and silicon. A silvery-white metal it is the 13th element in the periodic table, binding easily with other elements, but pure aluminium does not occur in nature which is why it was not produced on an industrial scale until 1856 and exceeded the price of gold in the 19th century.



"The city, however, does not tell its past, but contains it like the lines of a hand"
*Italo Calvino, Invisible cities*