

# Playing with Fire

## Contemporary UK Enamel

A collaborative exhibition developed by The Devon Guild of Craftsmen with the University of the West of England and the British Society of Enamellers

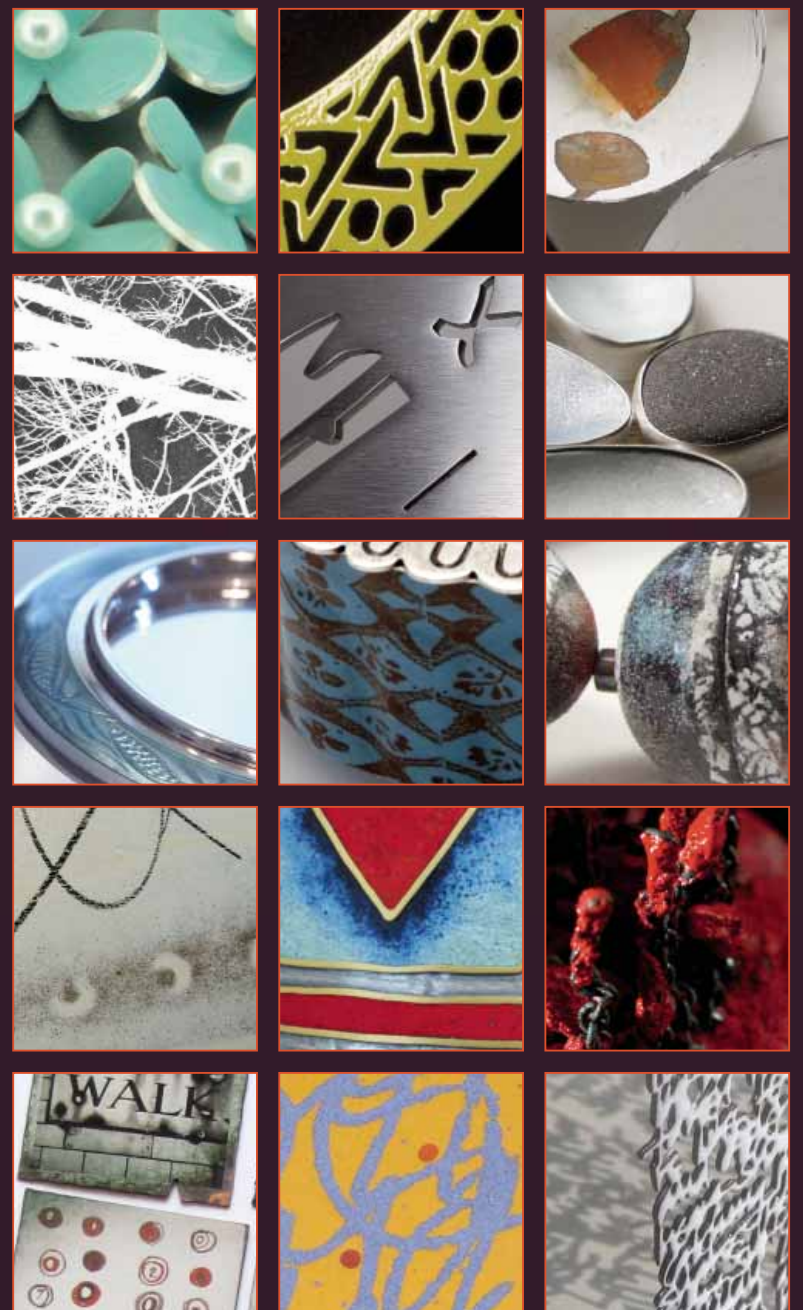
## A Devon Guild of Craftsmen Touring Exhibition

*Playing with Fire* is a major survey exhibition of contemporary UK enamelling. Central to the exhibition's concept is the challenge for each exhibitor to show pieces that take their previous work into new territories with the aim of raising the appreciation of enamelling through showing the most innovative work from the UK. *Playing with Fire* is a fantastic opportunity to show off the wealth of existing enamelling talent in the UK and to stimulate new approaches to the medium from professionals and new makers alike.

The exhibitors have been selected from an open competition. The resulting exhibition is a mixture of established and emerging makers, working in traditional and contemporary applications, at the cutting edge of their fields. All work submitted was judged on its merits, from those pieces that are classically enamelled through to those whose strength lie in concept, originality, and investigations into new ways of enamelling. The selection jury consisted of Simon Fraser, Dorothy Hogg MBE, Evangeline Long and Elizabeth Turrell. The large amount of submissions and the variety of processes made the selection process exciting, thought provoking and sometimes difficult for the panel.

*Playing with Fire* is committed to educating audiences about enamelling as a relevant and contemporary activity that is worth appreciating, preserving and learning. The tour of this exhibition to venues across the UK is both exciting and beneficial to the exhibitors, audiences and to enamelling as a whole.

**Exhibitors:** Kathryn Adamson, Stephen Bottomley, Helen Carnac, Tamar De Vries Winter, Beate Gegenwart, Grace Girvan, Rachel Gogerly, John Grayson, Joan MacKarell, Jilly Morris, Zsuzsi Morrison, Liana Pattihs, Kimberley Scott, Ed Silverton and Jessica Turrell.



University of the West of England

BRITISH SOCIETY OF ENAMELLERS  
GLASS ON METAL ARTISTS

# Enamel

## The fusion of glass + metal + fire

Vitreous enamel is a clear or coloured glass that is bonded by fusion with heat to a metal surface (gold, silver, copper, steel, stainless steel or aluminum). The process of fusing the glass to the metal is called enamelling. The finished product is called enamel.

The primary ingredients of enamel are silica, potassium, sodium, borax and lime. Colour is made by the addition of various minerals, often metallic oxides. These materials are fused in a furnace until molten and then poured onto steel slabs to cool, forming a glass pancake, or they are dropped into cold water to form chunks called frit. Next the enamel is ground to a powder in a ball mill or between steel rollers. Enamel comes in various forms including lump, liquid, powdered, millefiori, threads, and onglaze/painting enamel. Enamel is applied to a metal base either as fine dry granules by sifting, or mixed with water or a medium and applied in a wet state. It is then fired in a kiln (at between 760 and 900°Celsius for a few minutes) until the glass becomes molten and bonds to the metal.

Enamel can be transparent, opaque or opalescent. Transparent enamels react with light reflected back from the metal. Opaque enamels cover the surface so that the metal or colours underneath are obliterated. Opalescent enamels are manufactured in just a few colours - they are semi-transparent but give a milky or opal effect.

Enamel is permanent and has many excellent properties: it is smooth, hard, chemically resistant, durable, can assume brilliant, long-lasting colours, and cannot burn. Its colour will not fade; the finished enamel surface has a glassy brilliance and richness. The surface can also be abraded (or stoned) to make it less shiny, creating a sensuous finish. The final coat of enamel can be under-fired to create a matt and sand-like finish.

Enamelling is an old and widely-used technology. The earliest examples date from the Mycenaean period. The Ancient Egyptians applied enamels to pottery and stone objects. The Ancient Greeks, Celts, Russians and Chinese also used enamelling processes on metal objects, and the Romans enamelled glass. Its durability has found it many functional applications from early 20th Century street and advertising signs, interior oven walls, cooking pots, exterior surfaces of kitchen appliances and cast iron bathtubs to equipment for the chemical and pharmaceutical industries.

There are many different techniques in the field of enamelling, all of which involve either creating relief pattern on the metal base layer and then enamelling on top, or creating pattern on top of an already-fired layer of enamel. The artists in this exhibition use a variety of techniques in a very free way: their concerns lie with the creative process.



Equipment for applying enamel: sifter, brushes, stencilling items, enamel pots and pallet



Lump enamel, Elizabeth Turrell



Electric Kiln



Enamelling tools, Zsuzsi Morrison



Silver and 22ct gold wire, Zsuzsi Morrison

# Champlevé, Cloisonné and Plique à jour

*These are examples of some traditional techniques which have been used for many centuries*

**Champlevé** *champ-le-vay* or 'raised plane'. The origin of champlevé enamels dates back to the Celtic work of the 1st Century. The Celts poured molten glass into bronze objects and jewellery that had been chiselled away to form recessed areas to hold the glass. This Celtic technique is the essence of champlevé. It developed and flourished in mediaeval Europe, and it was common to combine champlevé and cloisonné. Champlevé was accomplished then by engraving depressions in the metal. This process is exacting. It requires considerable skills and produces highly controlled and sharp detail.

Contemporary enamellers still engrave but more commonly use acid to etch the copper form to produce the recessed areas. Blocking parts of the etched areas with an acid resist can produce additional layers. Enamels are then repeatedly wet laid and fired in the recessed areas until metal and enamel are brought to the same level. This metal may be engraved, plated, patinated or polished.

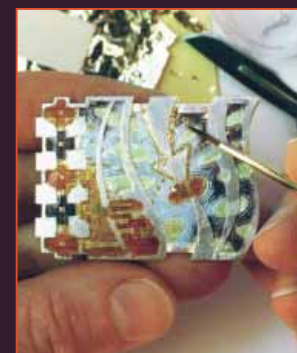
Bold designs work best for champlevé. The finished piece should create a balance between the metal and enamel, both the exposed metal and the colour of the enamel is important, strong colours are most effective.



Engraving



Applying the first coat of enamel



Applying gold foil



The finished piece

**Cloisonné** *klwa-son-nay* is French for 'cell'. Thin strips of metal (wire) are bent to make an outline of a pattern and traditionally they were attached to the metal base by soldering. Most contemporary enamellers fuse the wire into a previously fired coat of enamel; the cloisons (fenced-off forms) are then filled with powdered enamel and fired in several layers. The enamel is then ground level with an Alundum stone and/or emery paper, and then either polished to a sheen by hand, or refired until the enamel surface has glossed over.

*Zsuzsi Morrison uses this traditional technique in a free form manner*



Shaping and placing the wires, Zsuzsi Morrison



Applying the enamel, Zsuzsi Morrison



Final piece, Zsuzsi Morrison

**Plique à jour** meaning 'Light of day' or window enamel is the most fragile and exacting of enamelling techniques. In plique à jour work enamels are transparent or translucent and are fused across a design of cells of gold, silver or copper; a backless cloisonné. The object needs to be well lit to reveal its transparency and complex structure.

One technique is to pierce small openings through the metal with a jeweller's saw and then fill them with transparent enamels to produce the design (as seen right). This creates a jewel-like appearance much like a miniature stained glass window.

Alternatively cloisonné wires are fired gently to a flux (clear colourless enamel) coated copper base and the piece finished in the usual cloisonné method. The copper base is then etched away leaving a fragile pattern of enamel and wire.



Marking out the cells for the enamel



Piercing the shapes with a fine bladed jeweller's saw



Filling the cells with enamels



The piece is suspended on wire for firing



Second coating of enamel; then fired for a second time



Finished piece

# Wet process/Porcelain enamel and Sgraffito

**Wet process/Porcelain enamel** is enamel that has been finely ground and suspended in water by processing in a ball mill. The enamel is made and supplied commercially. It is also called slush or crackle enamel. It can be applied by spraying, pouring, dipping or brushing. It is useful for sgraffito, slip trailing and a range of more painterly styles. Liquid enamel has a very fine particle size, which enables finely detailed work to be performed, particularly when it is being used with the sgraffito method.

The enamel is prepared by grinding clay and various deflocculants (inorganic salts) together in a ball mill for several hours. The deflocculants act as suspension agents and keep the slush or slip enamel in a creamy consistency. As the enamel is dipped and sprayed it is usually ground finely enough to pass through a 200-250 mesh screen.



**Industrial frit** – clear, black and opaque frit for industrial enamels before grinding in a ball mill with other chemicals and oxides to make the industrial wet process enamel, Elizabeth Turrell



**Wet process/Porcelain enamel** – buckets ready for pouring, brushing or spraying, Elizabeth Turrell



Coating copper shapes with liquid enamel



Painting with liquid enamel



Finished piece

**Sgraffito** is a particularly appropriate method for enamel as it is a way of producing a fluid and spontaneous drawing. Sensitive and delicate lines can be achieved as well as bold and strong marks.

Sgraffito is an Italian word meaning scratched. These incised marks are created by scratching away a drawing or design, exposing either the metal or a fired enamel coat beneath. This approach allows drawings of energy, spontaneity and great delicacy, especially if the drawing/mark-making is done through a dry coat of wet process enamel. This may be a purely linear decoration or larger areas may be scraped away. The surface can be built up in subsequent firings. This is primarily a ceramic technique and has been used for centuries.



Different stages of sgraffito



Sgraffito work, Joan MacKarell *Necklace Installation*

# Stencilling, Sifting and Transfers

**Stencilling** is a technique for confining enamel to certain areas. Complex designs can be made with negative stencils or laid on in many small positive sections. Torn edges can produce an effect unobtainable in any other way. The design can be carefully worked out beforehand; several layers of pattern and the addition of new stencils can build up the colours after the first layer and the process repeated. (Durable stencils can be made from commercial stencil paper). Cut shapes can be made, as well as found stencils such as wire mesh, leaves, lace and plastic shapes.

The enamel is **sifted** (dusted) through a hand held screen or sifter over the stencil, which is removed before firing. Stencils can also be carefully placed on dry wet process enamel to produce a drawn outline of the stencil or by scratching the enamel to remove the exposed area. The advantage of stencils is that they can be used to repeat an image as many times as required.



Top: Red enamel threads and reflective glass beads, middle: White, black and red sifting enamel, bottom: Sifting, Elizabeth Turrell



Sifting, Stephen Bottomley  
*Yellow Ribbon Neckpiece*



Sifting, Joan MacKarell  
*Necklace Installation*



Sifting onto the stencils



Finished piece before firing



Finished piece

**Transfers** (also known as decals) are made by printing an image onto a thin flexible plastic carrier, which has a paper backing. The carrier is released when soaked in water and the image is floated onto the pre-enamelled piece; once the transfer has been positioned flat on the piece it can be dried and fired.



Transfer map, Tamar De Vries Winter  
*Treecups*



Applying transfer, Tamar De Vries Winter  
*Treecups*



Firing transfer in kiln, Tamar De Vries Winter  
*Treecups*



Finished piece, Tamar De Vries Winter  
*Treecups*