Press Release:
Dress of Glass and Flame

By Helen Storey: a new art work exploring the chemistry of glass and flame

In collaboration with The Royal Society of Chemistry (RSC), University of Sheffield, Berengo Studio (Venice/Italy), London College of Fashion and Helen Storey Foundation.
Dressofglassandflame.org

To be launched at the Venice Biennale, May 31 - November 24, 2013

Background on the art / chemistry

" As soon as I entered this historic work space where the furnaces burned, and men, who had been making glass this way for centuries toiled with abject skill, I fell in love with the place and the art – that we can't settle on whether glass is a liquid, or a solid, makes the mystery of the material unendingly mesmerising for the creative mind – working in the space, on a cold winters day, moving past the sequence of open and roaring fires, is like having your soul repeatedly kissed". Helen Storey April 2013

Helen Storey MBE (Professor of Fashion Science in the Centre for Sustainable Fashion, London College of Fashion) first trained as a fashion designer and worked at Valentino and Lancetti in Rome, returning to London in 1983 to set up her own award winning Helen Storey fashion label. In 1997, she dramatically changed direction, collaborating with her biologist sister Kate, producing 'Primitive Streak' the first 1,000 hours of human life chronicled through 27 dresses, which used bespoke textiles to elucidate the embryonic story. This work named by the media, as a 'cultural hybrid' is now seen as a collection of national importance and was a seminal work.

Helen's fascination with science deepened. In 2004 she began looking at new ideas for packaging – to create an artistic provocation, which might shine new light on solving environmental problems. During research she met polymer chemist (now PVC of Science at University of Sheffield), Professor Tony Ryan OBE. A unique collaboration followed which has been courageous and unexpected.

They first conceived the project 'Wonderland' (2005 – 2008) examining our use of plastics, featuring the "Disappearing Dresses" which dramatically dissolved in water. In 2008, and inspired by Wonderland, the idea for 'Catalytic Clothing' emerged. Tony reports he then worked on a formula (during a lengthy committee meeting at the Royal Society of Chemistry) - exploring how the scale of surface area on clothing and textiles could be used as a catalytic surface to purify air, employing existing technology in a new way. A series of art and digital interventions took this forthcoming technology into the public domain. The concept is now in research and development with commercial partners for future consumer use.

Helen's curiosity with the beauty and inspiration of science continues. "**Dress of Glass and Flame**" is a new collaborative work, between Helen, the Helen Storey Foundation, Royal Society of Chemistry, and the London College of Fashion. The piece has been produced by world renowned Berengo Studio in Venice. This project has come about as a result of a continuing dialogue with the Royal Society of Chemistry. Instrumental in making this possible, the RSC has supported Helen Storey's and Tony Ryan's creative art / science projects since visiting Wonderland in 2005.

"*In supporting this project, we feel that the beauty and uniqueness of the '**Dress of Glass and Flame**' will reach new levels of the public's understanding of chemistry at the Venice Biennale and we hope it will stimulate the curiosity of young people to learn more about science and its fundamental importance to the future of our world.*"
Royal Society of Chemistry President Professor Lesley Yellowlees, April 2013

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For the Biennale, Helen was been drawn towards the chemistry of both glass and flame, and wanted to create a work within which a part of the original creative and alchemic process could be kept 'alive'.

The chemistry behind the 'Dress of Glass and Flame' by Prof Tony Ryan:

Glass: The thing we know as glass is in itself a mystery. At the atomic and molecular level it looks like a liquid, the atoms are close together but arranged at random, but in our hands we know it is a brittle solid. The answer to this paradox is that the atoms are moving very slowly, so slow that we break the bonds before the material can flow. When a glass gets hot it acts like a rubber or a viscous liquid, depending on the internal bonds, and we can permanently change its shape. It is this property that allows us to make intricate shapes from glass.
The most common glass is made from sand or silica, silicon dioxide, SiO2. This was the first glass discovered as beads in the embers of a very hot fire more than 4000 years ago. Most modern soda-lime glass (for windows and bottles) has other ingredients added to make it workable at temperatures lower that the 1200 C required for pure silica. Soda-lime glass is very brittle and can often crack on cooling because of its high thermal expansion, so Pyrex glass was invented by Dow-Corning in 1915 to get around this problem. It contains boron and is known as borosilicate glass. It was a development of other thermal shock-resistant glasses and finds widespread use as both laboratory glassware and for cooking. The "py" in Pyrex® is really a pie, as the first commercial use was to make a pie-dish.

Flame: A flame is a magical dancing chemical reaction. It is the visible, gaseous part of a fire. It is caused by a highly exothermic reaction, taking place in a thin zone and the heat is so intense it excites the molecules enough to produce light. Colour and temperature of a flame depend on the fuel involved in the combustion.
Just think about lighting a candle. The applied heat causes the fuel molecules in the candle wax to vaporise. In this state they can then readily react with oxygen in the air, which gives off enough heat in the exothermic reaction to vaporise yet more fuel, thus sustaining a consistent flame. The high temperature causes the molecules to decompose, forming various incomplete combustion products and free radicals. The intense energy in the flame will excite the electrons in some of the transient reaction intermediates resulting in the emission of visible light as these substances release their excess energy. And you can use the colour of a flame to estimate the temperature.

Exhibition:
May 31 - November 24, 2013
Glasstress: White Light / White Heat
Contemporary artists and glass
Collateral Event of the 53rd International Art Exhibition – La Biennale di Venezia

On its return to London in November, and following display at a yet to be announced venue, the dress will be highlighted in the Royal Society of Chemistry's programme of public outreach activities in 2014 and is expected to tour to various locations around the UK and to science festivals.
For more information, including 'works in progress', please see: dressofglassandflame.org

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