

# Colours of Water



**MENIERGALLERY**



The **Colours of Water** is a gathering of human beings with a deep interest in and concern for water. But unlike many other gatherings or conferences, where the mind is pre-eminent, this gathering is also a gathering of the senses.

Artificial barriers have long been drawn between science and art, largely by what appear to be fundamentally different 'languages', and by a view (held by a reductionist few thank goodness), that unlike scientific research and practice, art is non-verifiable and offers no 'truth' in its material presentations and outcomes.

But here we are going to see (and hear) activities and outcomes that disprove any ideas of separation and intellectual alienation! The truth is that both artists and scientists are observers of the infinite phenomenal variations of the materials in and of the cosmos. Symmetry, chance, even quantum energies, are as relevant to the scientist as they are to the creative artist.

Water is not only the catalyst for life itself, but it is an enduring and evanescent part of the way we perceive ourselves as 'quantum particles' in the universe. Think of the drawings of water by Leonardo; the deluge-studies by JMW Turner; the limpid reflections (in water) of Monet; of Debussy's ocean in turmoil and calm in his beautiful *La Mer* and even of the raging torrent of stormy words and ideas at the very opening of Shakespeare's *The Tempest* and you will know of the powerful influence and attraction of water for artists of all kinds

and from all periods (and cultures) in the history of art.

When Mae-Wan writes of the rainbow colours of water in her new book (*'Living Rainbow H<sub>2</sub>O'*) and when one sees the mathematics of water, on page after page, one also sees the divisionist 'atoms' of colour to be found in the paintings of Seurat and Signac, and also the thousands of 'coloured points' (musical notes) in Beethoven, Wagner, Debussy, Messiaen and even in my own Concerto for Orchestra-Studies in the Movement of Water.

Leibnitz was right, all things connect. But what is especially exciting about this event, is the sense it is going to bring of inter-sensuality itself. In joining we are forming a beautiful 'arch' (a rainbow perhaps) between thought and sensation.

Thinking-alone will not solve the problems of our species facing habitat-destruction and global warming. I like to think that what we shall do together will be based in Koestler's old brain activity as much as it will be the product of our 21st century minds and bodies of knowledge. Sharing and celebrating like this is a direct link with our earlier hominid ancestors. Once again, we will become the minds in the cave, but with the addition of our senses, the 'space' we will inhabit will be fertile, mercurial, liquid, crystalline and simply beautiful.

**Edward Cowie**, Artistic co-Director  
Maurens, France, November 2012.

Welcome to **Colours of Water**

A festival of art, science and music

Conceived and brought to you by the **Institute of Science in Society**

Water is the focus of rituals and myths in cultures across the world, because of its powers to cleanse, purify, and heal; just as its infinitely varied forms, colours, and moods are the stuff of art and poetry; and Edward Cowie - most illustrious composer/visual artist/naturalist of our age - has provided some wonderful examples in his Foreword. The beauty and tantalizing mysteries of water have possessed generations of scientists, for they are just the qualities that make it essential for life.

Unfortunately, this precious and vital life-resource is being depleted and degraded at alarming rates, and further threatened by global warming (see World Water Supply in Jeopardy, *SiS* 56). As generally recognized, the lack of fresh, clean, water severely threatens food and energy security, as well as health, political stability, and economic viability. The looming water crisis is avoidable, and a raft of measures to improve water-use efficiency, to harvest water, and to reduce pollution need to be widely implemented (see Using Water Sustainably, *SiS* 57). However, public awareness remains low, and very few political leaders have taken the issue on board.

A proper public understanding and appreciation of water is urgently needed, if we are to win the hearts and minds of people in ending the destruction and devoting major efforts into conserving and restoring this essential life-resource. But there are also deeper reasons to focus on water.

The world is in turmoil, old institutions are breaking down; the global financial crisis deepens amid widening inequality and spreading social unrest. People everywhere are ripe for a change; and we believe that water, both the science and art of water, holds the key to the change.

Water is not only essential for life, it also embodies all that life entails: spontaneous and free-flowing, sensitive and responsive, accommodating and flexible, yet effective and powerful. It is emblematic of the organic revolution that has been taking place in physical science and the arts, but still waiting to happen in biology and in society at large.

New findings in the quantum physics of water are profoundly

changing our understanding of life, and what it means to be a real organism instead of the mechanistic simulacrum that has dominated biology and our social institutions for hundreds of years. The new knowledge of water - and I mean knowledge in all senses of the word that involves complete comprehension with heart, senses, and mind - will transform every aspect of life: from health and education to the pursuit of happiness.

To contribute to the momentous task of engaging society in the appreciation of water and building a better life for all, a group of scientists, engineers, artists, musicians, and other professionals have put together possibly the world's first festival of art, science, and music. This is taking place over the period 12-28 March 2013 at the Menier Gallery in London (51 Southwark Street, London SE1 1RU, nr London Bridge underground station). An exhibition of visual arts, sound and multimedia installations is held at the Gallery for the entire duration; with a series of workshops and performances leading up to and around two full day conferences, the first on 21 March dedicated to the new science of water and life, and the second on 22 March, dedicated to World Water Day.

We are extremely heartened by the enthusiastic and spirited response from our presenters who have created new works inspired by the festival. Many are also donating their expenses in part or in full to support the festival. We are most grateful to them, for without their creativity, dedication, and support, our festival would not be taking place.

We would like to thank Julian Haffegge, Peter Saunders, Eva Sirinathsinghji and Emma Churchman of ISIS, especially for the long extra hours they have put in to help organise the festival.

Finally and not least, we thank our sponsors, Third World Network, Salvia Foundation, Helga Kreutzritter Foundation, and Zeus Jones for financial support.



**Mae-Wan Ho** Festival Curator and Artistic Director  
London, November 2012

**Menier Gallery**, 12-28 March 2013

**TWN**

Freundeskreis Helga Kreutzritter

  
**SALVIA**

  
**zeus jones**

All events available for pre-booking online at:  
<http://www.i-sis.org.uk/coloursofwater/>  
Telephone: 44-(0)1908-696101  
Post: Colours of Water ISIS, 29 Tytherton Road, London  
N19 4PZ, UK.

Registering for the main World Water Day Conference entitles you to the Art Exhibition preview reception

## Colours of Water Art Exhibition

12-28 March

11:00 – 18:00 (closed Sundays) Admission free

Visual arts by

**Edward Cowie, Heather Cowie, Kathy Haffegge, Mae-Wan Ho, Li Poon and Matt Poon**

Multimedia & sound installations by

**Susan Alexander, Martin Chaplin, Julian Haffegge, Mae-Wan Ho, Tom Lawrence, Li Poon and Pradan**

12 March

18:00 – 20:00 Preview free for registered participants and invited guests only



## Music/Multimedia Performances

20 March

14:00 – 16:00

**Susan Alexander: Fluid, a Creation in Sound**

Sound creation inspired by living water in the body

Ticket £12

19:00 – 21:00

**Chris Lee, Jenny Howe, Joe Pettitts and Rod Youngs: Waterscapes**

World premiere piano-led jazz trio on water-related themes & vocals

Ticket £12

21 March

18:00 – 19:30

**Earth Music Unlimited: Water Music Unlimited**

Improvisations by Edward Cowie piano, with Stephen Preston flute, and Mifune Tsuji, violin

19:30- 20:00

**Edward Cowie: Waters of Life**

Two studies for solo piano, world premiere, played by the composer

Ticket for both performances £12

22 March

11:00 – 11:30

**Eric Landen & Stevo Hausheer: Resonances: The Spirit of Water**

Dedication to World Water Day (included in conference fee)

19:00 – 21:00

**Lotte Anker & Mark Sanders: You are Water, I am Water**

Saxophones and drums, world premiere structured improvisation

Ticket £12

23 March

14:00 – 16:00

**Julian Haffegge: Water Carnival**

The science & art of engaging nature's quantum jazz

Ticket £12

## Workshops

16 March

11:00 – 12:30

**Martin Chaplin: Molecular Models of Water**

Science & art of structuring water

Ticket £12

19 March

11:00 – 17:00

**Jim Oschman: Water & Energy Medicine**

Science & art of healing with water electricity

Ticket £40 (includes tea & coffee)

## Conferences

21 March

11:00 – 17:30

**New Science of Water for Life**

Admission £40

**Gerald Pollack, Martin Chaplin, Djuro Koruga, Emilio Del Giudice, Mae-Wan Ho, Peter Fisher, Elmar Fuchs, Tim Crowe**

22 March

11:00 – 17:30

**World Water Day**

Admission £40

**Eric Landen, Stevo Hausheer, Chee Yokeling, Dinabandhu Karmaka, Joe Cummins, Shui-Yin Lo, Jim Oschman, Mae-Wan Ho, Adrian Ho, Eva Sirinathsinghi**



# What the Presenters Say



I am totally at odds with the paradigm of conventional science that looks on matter as an inert entity pushed around by external forces. The paradigm of quantum field physics does not separate matter from movement as matter is intrinsically fluctuating.

There is a possibility of tuning together the quantum fluctuations of a large number of bodies and creating coherence in matter through music. Human organisms could be a part of such coherence.

Conventional science is very far from the dreams, needs and wishes of people. It has no place for the spontaneous movement of organisms or the love between organisms.

My fellow countryman, the philosopher G.B. Vico, said: "Poetic truth is a wider truth than physical truth". But he was referring to the mechanistic physics of his time.

Our task today is to show that the modern quantum field paradigm is able to raise physical truth to the same level as poetic truth; which is why I am so interested in the **Colours of Water** festival.

*Emilio Del Giudice, Senior Researcher (retired)  
National Institute of Nuclear Physics, Milan, Italy*



Diwali lanterns in water, [hostelbookers.com](http://hostelbookers.com)



Humanity is facing a crisis, perhaps the biggest in its history. We need to create a world in which an unprecedentedly large number of people can live together peacefully and sustainably, without conflict or over-consumption of depleting resources like water triggering a large-scale catastrophe.

We need new ideas and technologies and also new ways of thinking and living; in particular, a willingness on the part of those living in wealthy countries to change our lifestyles and give up some of our material privileges as we come to see our interests as inextricably intertwined with those of people (and other species) from the entire planet.

Science will undoubtedly play a central role in coming up with new ideas and technologies, and help to spread more responsible and less dogmatic ways of thinking. But it is music and the arts more generally that can widen people's circles of empathy.

Jazz musicians in particular are consciousness-raisers: they are bridges between cultures, because jazz, perhaps more than any other musical genre, has drawn from and blended so many different musical styles and traditions.

It feels right to be part of this eclectic festival of science and arts: celebratory and questioning, making new connections, and inspired by the universal and elemental theme of water.

*Chris Lee, jazz pianist, composer, and arranger;  
researcher/lecturer in psychology & linguistics, London*



What bothers me is when science and technology are used either by the state or by industry to control, dominate, and accumulate wealth, without thinking of how their actions disturb Nature, and with little regard for the poor or for future generations.

I was very happy to be invited to take part in the **Colours of Water** festival that is going to create awareness about water across the world.

Everyone knows "Water is life", but very little is said on how to provide water security for millions of smallholders farmers and rural landless families. To them water security is as good as food and income security. Drinking water has also been a major issue, especially with climate change, which will make rainfall more erratic.

I shall share our experiences in successful water management, and look forward to getting new ideas, for we are facing a very big challenge in access to water especially for the poorest.

*Dinabandhu Karmakar, agriculturist, PRADAN, New Delhi, India*



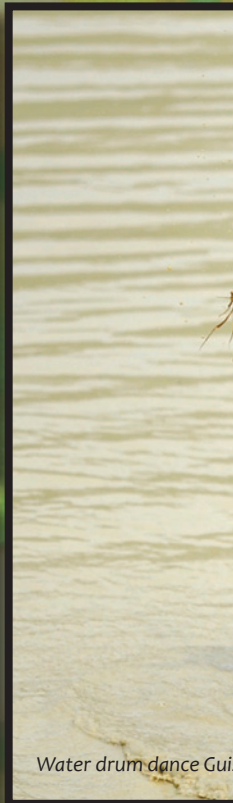
*Musica Universalis* was an ancient science that described the cosmos literally as music. It was an integrated, organic and uplifting comprehensive system of thought in which harmonic proportions and natural processes (laws) underlie all reality. Its origins are attributed to the Greek philosopher Pythagoras, but reach much, much further back in time. By the 17th century, however, music was relegated to 'the humanities', as far away from science as it could get.

My passion as a composer and researcher working closely with science is to help bring back the knowledge of universal music, so that science can reverse its current trend of separating everything into discreet (dare I say lonely?) parts. I think most of us, indeed scientists themselves, long for a kinder and more inclusive philosophy within which to explore exciting and brilliant new approaches.

A current fascination is how DNA (mostly water) might have a creative intelligence far beyond our understanding. My initial work with translating DNA's frequencies into sound has revealed it to be harmonically ordered, with not only coherence and design but also a capacity for improvisation.

Fluid, my latest soundscape, traces water's journey as it carries the Breath of Life throughout the body creating tides, stillpoints, and transformations. Water is something I am eager to explore further in **Colours of Water**.

*Susan Alexander, Composer  
Director of Science & The Arts, Portland, Oregon, USA*



Water drum dance Gui





I have been painting sporadically for over 40 years while being a full-time scientist; but it was not until I got to know water deeply and intimately as a scientist that my art took off in an unexpected direction; it is as though I have finally found my 'element', both literally and metaphorically, water is the essence of my being. My work in science led to the discovery of the living rainbow, the liquid crystalline water in organisms, it is "the means, medium, and message of life" as described in my new book, 'Living Rainbow H<sub>2</sub>O' (2012).

The Rainbow Snake was among the first paintings I did immediately after my manuscript was sent to the publisher. It has a special significance for me as I was born in the year of the snake, and 2013 is the year of the snake in the 12-year cycle of the Chinese horoscope. I also discovered that many cultures have creation myths of the rainbow snake. It is really as though the entire human species, or the entire universe, is in quantum entanglement, sharing a 'collective unconscious' or a universal quantum field from which we can draw inspiration.

Water is the real artist in my paintings (as in my science); I play a facilitating role, which is also true to the character of water. Water is not only the means, but especially the medium and the message of life. Water enables all to perform their best without control or force, freely and spontaneously, yet perfectly in step and in tune with the whole. That is what water's quantum jazz is all about.

And I want the whole world to quantum jazz with me in the **Colours of Water** festival.  
Mae-Wan Ho, scientist/artist and Director of ISIS



zhou theatlantic.com



Everyone knows something about water. Often they think of water as typical of liquids in general. However liquid water only behaves like most other liquids at very high temperatures (i.e. when superheated) and behaves strangely at lower temperatures.

Overall, liquid water can be considered an intimate mixture of two miscible liquid phases, one predominant at lower temperatures and the other predominant at higher temperatures.

No longer should we simply describe (or model) liquid water in terms of individual water (H<sub>2</sub>O) molecules or describe water's hydrogen bond as simple electrostatic interactions between discrete molecules.

We must consider both proton quantum effects and extensive electron delocalization within network(s) of water molecules (i.e. neither water's protons nor its electrons are pinned to individual molecules).

My lecture at the **Colours of Water** festival will attempt to put the record straight and describe the true picture of 'liquid water'.  
Martin Chaplin, Prof Emeritus of Chemistry  
South Bank University, London



Incredibly, even in 2012, the vast majority of companies still rely upon Taylorist (scientific management) principles to run their businesses. Whether it's through 'Six Sigma', 'Business Process Management', or Gantt charts, the apex of enlightened thinking in corporations inevitably centres around the linear, reductionist paradigm developed over 100 years ago and whose roots stretch even further back in time.

Such 'Scientific Management' has shaped every single aspect of business: from the frameworks and processes that organize internal operations and personnel to the models and methods companies use to guide their overall strategies and their relationships with clients, customers and shareholders.

It's hardly surprising then that business has such a poor reputation and such a poor record of performance. It's also not surprising that a great number of studies are emerging to confirm what normal people have always known: the world simply doesn't work like that, it's far more complex; far more interesting; and it can't be modelled in Excel.

That's largely why my partners and I left our jobs to start our own company. In so doing, we've had to discard most of what we'd learnt and rely upon our intuition and feeling to decide what to do.

That's why I'm so excited about **Colours of Water**. Science, and in particular, the science of water, has moved on considerably from the linear Scientific Management model. And if science can serve people and society, if it can be re-integrated back into our daily lives and our actual experience, there's at least some chance that business can also follow.

Adrian Ho, founding partner of Zeus Jones, Minneapolis, Minnesota, USA





I entered biology with a deep interest in the human mind and the burden of neuro-degeneration in our society. After a first degree in neuroscience and a PhD in molecular therapeutics, I became disillusioned with academic science, which has become abstract and detached from society, leaving people to the mercy of pharmaceutical and biotech industries not above manipulating science for profit.

Fortunately, I found the Institute of Science in Society (ISIS), which has taken a unique stance to combat the profit-driven reductionist approach of much of western science. ISIS provides accessible and critical analyses of the flaws in our medical, food, and energy systems, and provides alternative solutions and perspectives so sorely lacking in current thinking.

My main contribution is to food-related issues, especially the negative impacts of industrial chemical agriculture and genetically modified (GM) food on health and the environment. Independent scientific research is fully corroborating farmers' experience in the field.

The world's water supply is rapidly depleting, and environmental pollution is further threatening this shrinking resource. Agrochemicals are a major source of water pollution, and GM crops are proving poisonous for people and wild-life, and also require much more water to grow.

GM crops are a recipe for disaster especially in times of depleting water supplies, as I shall make clear during the *Colours of Water* festival.

Eva Sirinathsinghji, researcher & staff writer of ISIS



Flow by Mae-Wan Ho



Thales of Miletus (ca 640-548 BC), the father of Greek philosophy and science, said that all substances originated from water. More than 2000 years later, Nikola Tesla (1856-1943) transformed the power of water's motion (Niagara Falls plant) into light. Water as fundamental substance of life became a universal power source, electromagnetic energy.

Contemporary research on water and energy is creating a new paradigm for science: water structure may be the first source of vital energy  $E=H_2O$ , according to Gerald Pollack.

However, the *information* property of water and water information processing is little known or investigated. Our research shows that the molecular structure of water is based on  $e$  (2.7182 ...). In terms of information storage capacity,  $e$  is the optimal code basis; therefore we may say that water is a natural primordial information substrate responsible for supporting the diversity of life. In other words,  $E=H_2O=e$ .

The number  $e$  underlies many structural and energy phenomena in nature. Thales' belief that water is the primordial substance makes sense from information the point of view. We can say that the water molecule is the primordial information substance of the nature.

Why an art/science/music festival on water? Water is beautiful and sublime like the number  $e$ .

Djuro Koruga, professor, Head of NanoLab, Biomedical engineering, University of Belgrade, Serbia



Often described as '*inter-sensual*', my work is always empowered by the dynamics and energies of nature. Recently, my paintings have turned to water as a primal if mercurial inspirational source, especially its infinite capacity to carry, translate and transform image, reflection and colour.

Three decades ago, my work as a field geologist saw me walking and exploring the wild and often semi-arid landscapes of the Australian bush. This is a land of fabulous earth and rock colours. It is also a land where water is scarce and precious, and my daily routine revolved around the conservation of what little water we carried with us. I am deeply concerned about the future of this life-giving liquid in a world facing a crisis in population and the effects of industrialization.

The *Colours of Water* festival is a vital and potent microcosm of the learning, experiencing, evaluating, and sharing that humans do in our watery world. From space, we see the blue planet, a world of oceans, rivers, lakes, icy waters and clouds. It looks plentiful and inexhaustible but it isn't. The poet Rupert Brooke once wrote (of war), that '*all I can do is to point and warn*'. Water needs our care and protection and I feel the best way I can communicate this is to paint works which not only capture in time the realities of water's physical qualities but also resonate with the deeper emotional and mysterious feelings that we often experience in the presence of bodies of water. I want to '*warn*' by encouraging my viewers to respect and celebrate what we have.

Heather Cowie, ex field-geologist now visual artist







I am quite happy with conventional ecological science and any approach that aims to better understand nature, so we can learn from it, and align and harmonize with the whole. That's the science that serves people and connects with their hopes and aspirations.

What makes me unhappy is science driven by a desire to control and manipulate nature mechanistically without regard for the interconnected whole. That's the kind of science that leaves people out, and leaves people cold.

I am in the **Colours of Water** festival for inspiration. Many of the important scientific discoveries had an inspirational component, where that crucial intuition or new idea was received in a dream, or while communing with nature, meditating, listening to music.

Einstein said it well: "The fairest thing we can experience is the mysterious. It is the fundamental emotion which stands at the cradle of true art and science...."

I hope to inspire others with my contribution, and more importantly to receive fresh inspiration for my work. Much of the work in the sciences, especially if it's your 'day job', is very technical and requires us to 'live in the brain'.

With events such as the Colours of Water, there is a chance to experience more from the heart because it is so thoroughly inspired by nature.

*Eric Landen of Landen Consulting, specializing in corporate ecosystem economics, Lake Forest, Illinois, USA*



I see nature as beautiful. Its functional mechanisms display a level of elegance no less impressive than the paintings in the Louvre or the sculptures in the Uffizi.

You wouldn't think so from looking at current understanding science; much of it seems arcane, detached, and unrelated to common experience. A reason, in my opinion, lies in misguided approaches.

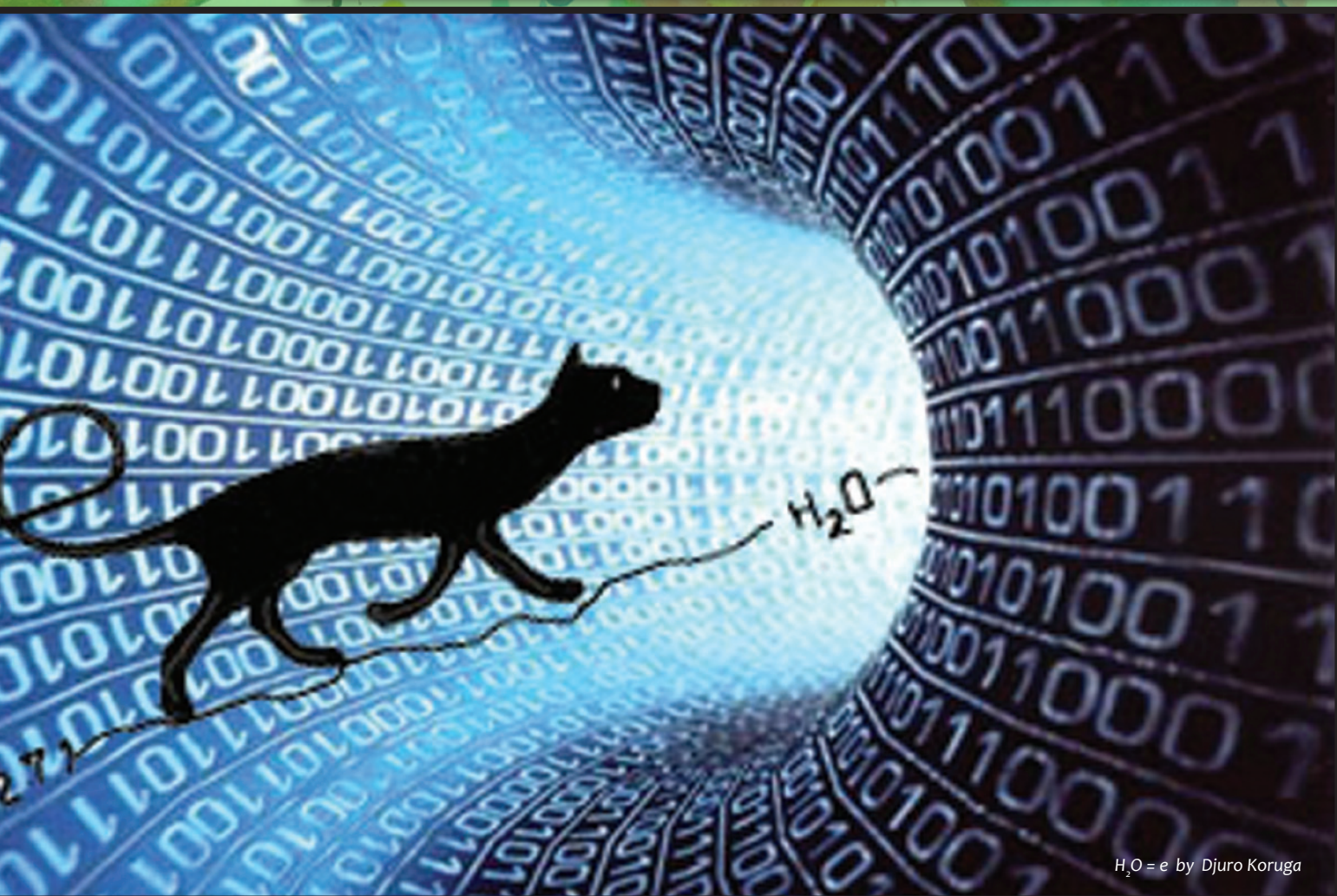
Many scientific endeavours are built on unsubstantiated, sometimes even erroneous, foundations. They draw us away from the elegantly simple models that we know to characterize nature.

Water provides an excellent example. Previous studies have led to complex models that depart from human experience and we can't easily relate to them.

In my laboratory we try to follow the time-honoured course of beginning with common observations and using the most basic principles of physics and chemistry to build an understanding that's nevertheless completely intuitive.

I deeply feel the aesthetic draw. Although a scientist by profession, I am drawn by the beauty of nature. That's why I'm attracted to the **Colours of Water** festival that seamlessly marries the science and the art.

*Gerald Pollack, Professor of Bioengineering  
University of Washington, Seattle, USA*



*H<sub>2</sub>O = e by Djuro Koruga*





Yunnan Water Splashing Ceremony



To work with water as an overall theme for musical expression and composition is an ocean of inspiration.

Water- basic and vital for all life - has infinite layers of concrete, symbolic, and philosophical meanings and connotations.

Water, more of less consciously, has been a recurrent theme in my music, both in improvisation and composition; and as such, a form-defining, energy-defining, as well as a philosophical principle. And sometimes, the concrete sounds of water are there too.

To be invited to **Colours of Water** is a true joy, and a great possibility for exciting and beautiful things to happen.

Lotte Anker, Jazz saxophonist/improviser/composer



My 40 year journey through cell biology, biophysics and energy medicine led to the simple realization that all of us possess the most profoundly effective healing device in the universe: a heart! I am honoured to join in bringing nature's truth and beauty to the **Colours of Water** festival.

Hearts possess a truth that some in the disease-care industry would like us to forget. Our hearts contain the vital wisdom, rhythms, colours, and music needed to heal our body and avoid disease. Our hearts have huge energy fields and many other resources that touch and affect those around us.

Water and biological coherence have much to teach us about managing our own energy systems to optimize our health, vitality and longevity. The science of water leads to an appreciation of the liquid crystalline molecular fabric that interconnects all parts and processes within us. This living matrix gives a substantial basis for the term "holistic" and a scientific basis for all of the alternative therapies. We are learning how energy moves in this molecular fabric. Energy medicine is the future of medicine because it acknowledges key ingredients of living nature: energy and information, topics rarely discussed in conventional biomedicine.

Jim Oschman, cell biologist, biophysicist, and energy medicine-man, Nature's Own Research Association, Dover, New Hampshire, USA

Creatures of the Blue Lagoon (detail) by Li Poon







“Water, water, everywhere, nor any drop to drink.” The words of Samuel Taylor Coleridge in the *Rime of the Ancient Mariner* is particular apt now as the days grow warmer and the oceans rise, and the global supply of clean drinking water is rapidly shrinking.

Most of us will be consuming only second hand water (water that has passed through the sewage treatment processes). That water may contain trace quantities of pathogens and toxic chemicals. Even large bodies of fresh water such as the Great Lakes contain detectable quantities of pesticides, industrial chemicals, along with levels of pharmaceutical drugs and illicit drugs and their toxic breakdown products.

There are several areas of the globe where the drinking water sources are polluted with arsenic, fluoride, mercury, or lead.

There are remedies and there are new approaches to providing healthy water, and those remedies should be provided for rich and poor alike. This is an important part of the message that ISIS’ festival *Colours of Water* brings to the world.

Joe Cummins, Prof Emeritus of Genetics, and Distinguished Fellow of ISIS,



The entire Universe is one unceasing creative process, and the artist’s main preoccupation is to apprehend and communicate this process. My aim is to capture a ‘rhythm of life’ that pervades the universe, that both precedes and generates all of mass, energy and life.

I love forms that emerge, spontaneous and protean, rich and luminous, freely floating and unfettered by gravity, yet all unified and made coherent through this powerful life rhythm.

When I read that “Water is the means, media and message of life” in Mae-Wan’s new book ‘*Living Rainbow H<sub>2</sub>O*’, it immediately struck a chord. On a purely technical level, all my works are explorations of how water and paint flow and diffuse through different painting surfaces. I like to think that like life itself, all those strange and new life forms in my works come into being because of the unique and magical properties of water.

Li Poon, ISIS founding artist



It has been well-known in all cultures for thousands of years that water is vital for life. Without water there is no life. We have also known for 60 years that all life-forms (not counting viruses) have DNA. Without DNA there is no life. So DNA must have evolved from water.

DNA is a long double-helix molecule. So how does a complex double-helix structure like DNA evolve from a simple water molecule made up of two hydrogen atoms and one oxygen atom?

We discovered a solid phase of water made of stable water clusters (SWC) at room temperature and pressure. Ordinary ice melts at room temperature; but these SWC do not. In fact, we discovered with the atomic force microscope that some SWCs are double-helices microns in length, quite similar to DNA.

So it is reasonable to suggest that the double-helix of DNA evolved from the double-helix of SWC. SWC enters at life at the beginning, and is involved in every stage of its evolution.

The primary intercommunication system of the body is the meridian system of traditional Chinese medicine that goes back several thousand years. We propose that the meridian system is made of SWCs. When the meridians are blocked, *qi* (bioenergy) does not circulate, our body loses balance and we become ill.

We are very excited to be able to share the implication of this fundamental discovery in the physics and chemistry of water at the *Colours of Water* festival that would enable everyone to take back control of their own health. We shall also show beautiful colour pictures of water that vividly illustrate the life process.

Shui-Yin Lo, Director of Quantum Health Research Center, Pasadena, California, USA





*Into the Deep 4 – Fathoming Cinque Terre by Heather Cowie*

12-28 March

11:00 – 18:00 (closed Sundays)

Admission free

Exuberant outpourings in a profusion of styles and themes with great originality and verve from each of six artists, most works newly created for and inspired by the festival; also sound and multimedia installations.

**Edward Cowie**, world renowned composer, artist and naturalist, draws and paints to find new music arising from intimate communions with nature.

**Heather Cowie** creates shimmering ever-changing surfaces on canvas with infinite flakes of colours subtly juxtaposed and superimposed, to express “water’s infinite capacity to carry, translate and transform image, [its] reflection and colour.”

Textile artist **Kathy Haffegge** magically stitches fabrics into intricate patterns and rich textures with dyes, beads, paper, metals, wires, paint, embossing powder; already collectors’ items.

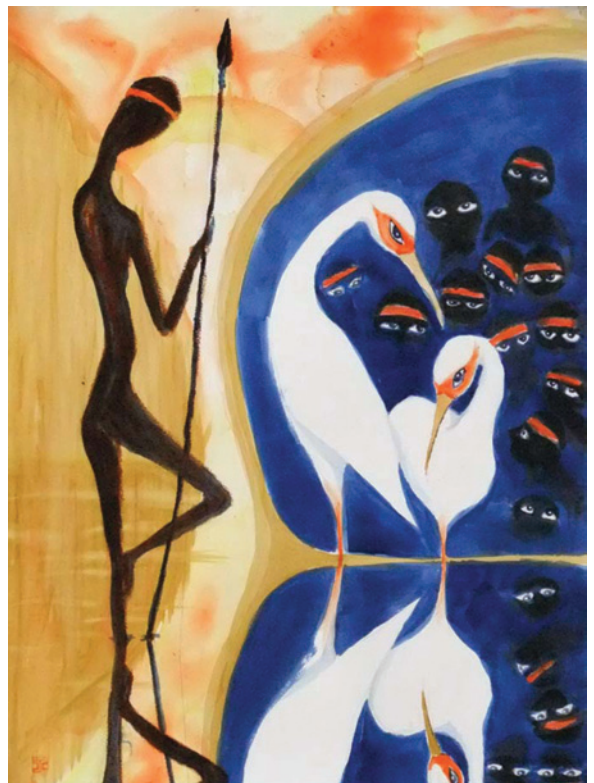
**Mae-Wan Ho’s** colourful, energetic, spontaneous, and free flowing gestures (‘water’s quantum jazz’) come directly from her deep knowledge and love of water. “I want to paint what it feels to be water, and to be in water.” Water and colours fall, flow, merge, and

overlap of their own accord, to capture each unique moment of creation.

**Li Poon** goes beyond a seamless fusion of Chinese/European/Meso-American traditions to surprise and delight, as forms emerge effortlessly and tumble out from his paintings, which are much loved for their ‘shamanistic’ qualities.



*Rainbow Snake Quartet (first panel) by Mae-Wan Ho*



*People of the Water Reeds by Matt Poon*





*Barrier Reef 5* by Edward Cowie

**Matt Poon** makes Australian aboriginal water myths his very own in a series of new paintings at once romantic and naïve yet vibrant and authentic.

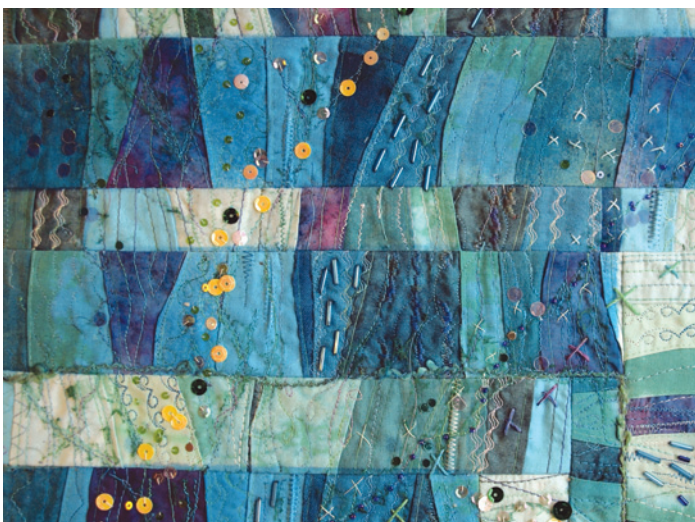
**Martin Chaplin** presents sculptures of Water Clusters and video installation, based on a model he proposed, which has been confirmed since by experimental evidence.

**Julian Haffegge's** Water Carnival mixes Tom Lawrence's award-winning hydrophone recordings with his own music and liquid crystalline images of organisms discovered in Mae-Wan Ho's laboratory.

Pradan, a group of scientists, engineers and other professionals in India, presents a video on how water conservation transforms waste land into verdant fields and orchards.

Sound installations include **Susan Alexander's** Ocean, originally designed for the July 2010 Oddfellows Gallery Installation in Mendocino, California, dir. By Thais Mazur; **Tom Lawrence's** Water Beetles of Pollardstown Fen, a series of hydrophone recordings of water beetles in a fascinating underwater soundscape; **Julian Haffegge's** Water Carnival mixes his own music to Tom Lawrence's tracks; and Classical Guitar music by **Li Poon**, who is an accomplished Spanish guitar-player as well as a consummate visual artist.

Full catalogue available for download here  
[http://www.isisart.org/Colours\\_of\\_Water\\_Art\\_Exhibition.pdf](http://www.isisart.org/Colours_of_Water_Art_Exhibition.pdf)



*Aqua Vita* by Kathy Haffegge



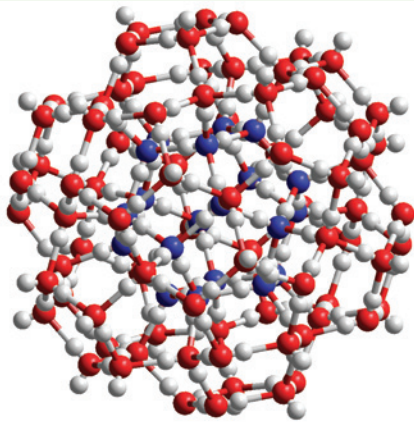
*Sunrise over the Lily Pond* by Li Poon



16 March 11:00 – 12:30  
ticket £12

**Molecular Models of Water - Martin Chaplin**

Water is the strangest liquid on earth, and its strangeness is precisely why it is essential for life. See what liquid water is really like by learning to build beautiful molecular models from the most authoritative scientist in the field; suitable also for school children.

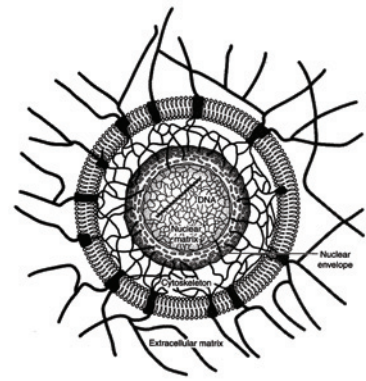


19 March 11:00 –  
16:00 admission £40

**Water is Key to Energy Medicine - Jim Oschman**

This workshop is about the scientific discoveries validating alternative and complementary medicine, and the language that can describe those discoveries to the public and the

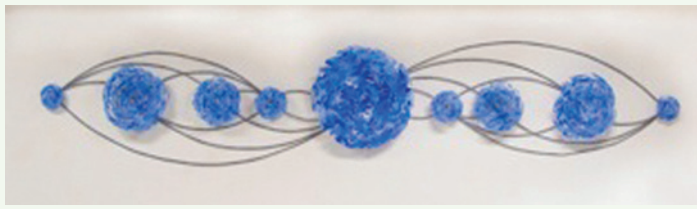
health-care community. The language is simple and the message is profound. It is an appreciation of energetics, a topic neglected in the education of most Western medical professionals. Water is key in updating the science of energetics and its clinical applications.



20 March 14:00-16:00 ticket £12

**Fluid: A Sound Journey through the Body - Susan Alexjander**

Fluid, the soundtrack, was first designed in collaboration with sculptor Rebecca Kamen for the Smith Farm Center for Healing in Washington, DC, spring 2012. It is a sonic journey through the body, guided by the craniosacral model of healing with its tides, stillpoints, breath cycles, pulses and delicate surges of expression. Everything entwines like root and flower, and the humble hero is water. We are heading towards a vibrational breakthrough on this planet, which involves sensuous, aware, body intelligence, and everything is jamming!



20 March 19:00 – 21:00 ticket £12

**Waterscapes Jazz Concert**

Chris Lee piano  
Joe Pettitt bass  
Rod Youngs drums  
Jenny Howe vocals

World premiere of piano-led jazz trio, partly inspired by artworks of the festival, and water-related songs

21 March 18:30 – 20:00 ticket £12

**Water Music Unlimited Concert**

By *Earth Music Unlimited Trio*

**Edward Cowie** piano

**Stephen Preston** Baroque flute

**Mifune Tsuji** violin

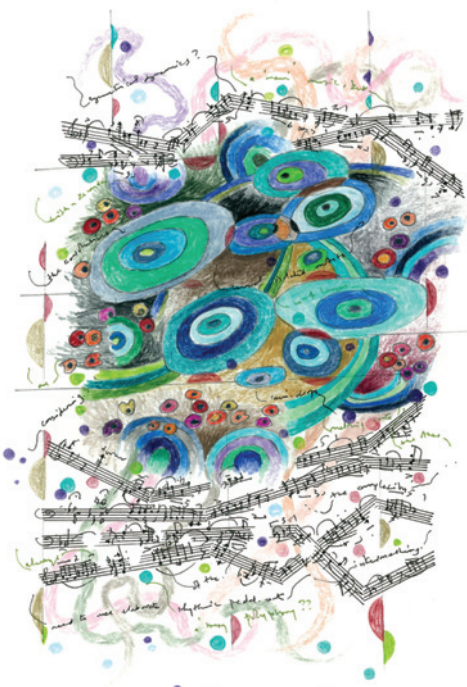
Three classically trained musicians with a single purpose: that music and the forces of nature coalesce and blend. All are deeply concerned with a quest to find new musical forms and new forms of acoustic self-expression. A recital of mainly improvised music in which the trio will intercommunicate to translate their experiences of water in several states:

- Cloudscapes • Snow • Falls and Pools (linked with Cowie's O Brook paintings) • Reflections • Wave Forms

Cowie will also be premiering two new studies for solo piano from his cycle,

***The Waters of Life.***

The musicians will also talk about their perceptions of water and sound, sharing their imaginations and how a contemplation of water can enhance and transform their playing and their musical ideas.





21 March 10:30 – 17:30 admission £40

### New Science of Water for Life Conference

This conference brings you right up-to-date with the amazing recent findings on water that demand a new cell biology and medicine. Hear it straight from the top water scientists and leaders in complementary medicine

#### Schedule

**Coffee** 10:30-10:55

**Peter Saunders** 10:55-11:00

*Welcome and Introduction from Chair*

**Gerald Pollack** 11:00-11:45

*Interfacial Water the Fourth State of Matter*

**Martin Chaplin** 11:45-12:15

*What water is really like*

**Djuro Koruga** 12:15-12:45

*Molecular structure of water based on e*

**Lunch Break** 12:45-14:15

**Emilio Del Giudice** 14:15-14:45

*Quantum Coherent Water & Life*

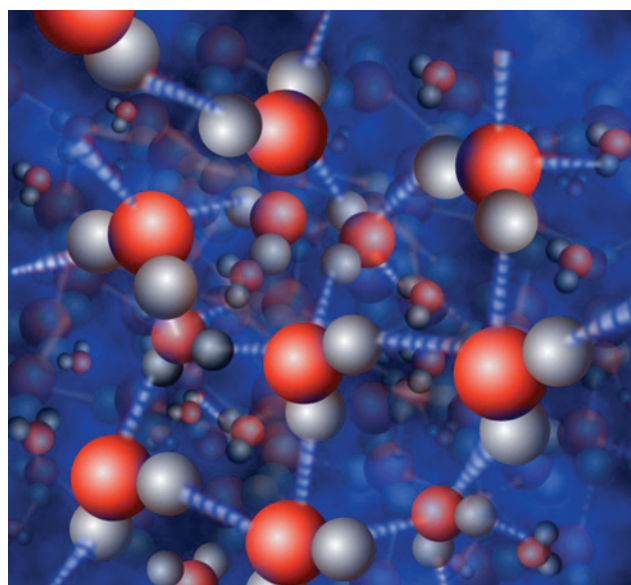
**Mae-Wan Ho** 14:45-15:15

*Living H<sub>2</sub>O, the Rainbow Within*

**Peter Fisher** 15:15-15:45

*How Water Heals*

**Tea Break** 15:45-16:00



**Elmar Fuchs** 16:00-16:30

*Understanding the Floating Water Bridge*

**Tim Crowe** 16:30-17:00

*Electrolyzed Reduced Water: Clinical*

*Experience in Pet Animals*

**General Discussion** 17:00-17:30

22 March 10:30 – 17:30 registration £40

### World Water Day Conference

This conference considers the new science and art of water in the global social context and how we can prevent a water crisis

#### Schedule

**Coffee** 10:30-10:55

**Peter Saunders** 10:55-11:00

**Eric Landen and Stevo Hausheer** 11:00-11:45

*Resonances: The Spirit of Water, a dedication to World Water Day*

**Chee Yoke Ling** 11:45-12:15

*Water is a Human Right*

**Dinabandhu Karmaker** 12:15-12:45

*Water is Life*

**Lunch Break** 12:45-14:15

**Joe Cummins** 14:15-14:45

*Toxic Cocktail & How to Unmix it*

**Shui-Yin Lo** 14:45-15:15

*Stable Water Clusters & Health*

**Jim Oschman** 15:15-15:45

*Water & Energy Medicine*

**Tea Break** 15:45-16:00

**Mae-Wan Ho** 16:00-16:30

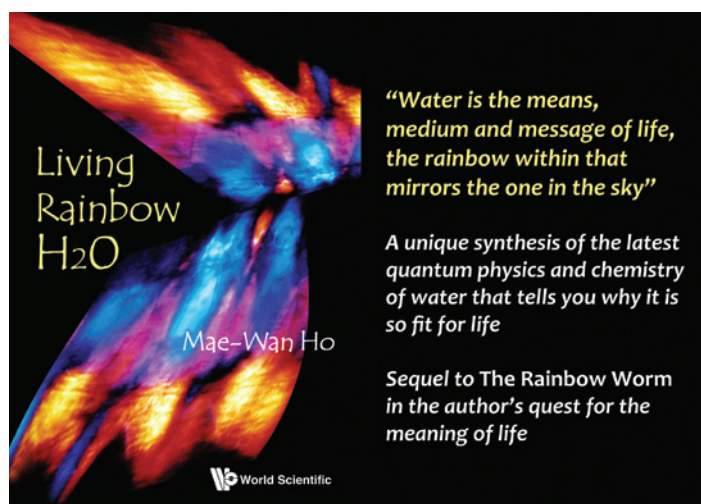
*Science & Art of Water*

**Adrian Ho** 16:30-17:00

*Learning to Flow*

**Eva Sirinathsinghji** 17:00-17:30

*GM Crops a Recipe for Disaster*





22 March 19:00 – 21:00 ticket £12

### You are Water, I am Water Jazz Concert

**Lotte Anker** saxophones

**Mark Sanders** drums/percussion

World premiere

You are water, I am water is a structure improvisation that explores different states of water and how those states translates into sound, energy and cyclic forms. The title (part quote from Yoko Ono) also refers to the more subtle and intuitive communication between human beings and the unity of human beings and nature.



23 March 14:00 – 16:00 ticket £12

### Water Carnival Workshop

Science & Art of Engaging Nature's Quantum Jazz

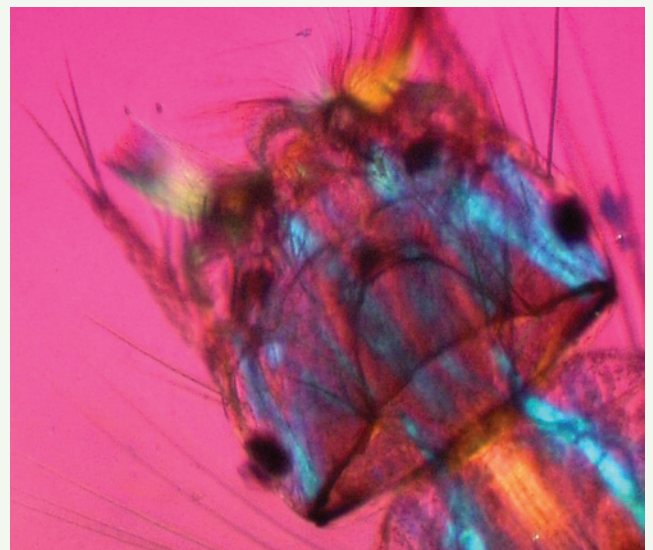
**Julian Haffegge** with introduction by **Mae-Wan Ho**

Nature is replete with rhythms, activity, and music. But most lab techniques are either too destructive or restrictive to enable organisms to tell the scientists what they are really like. A non-destructive microscopic technique (discovered in Mae-Wan Ho's laboratory) enables us to see living organisms in rainbow colours, and teaches us the most important lesson about living organisation.

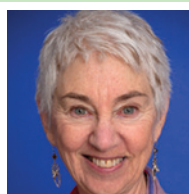
The late Tom Lawrence, prize-winning composer and sound recordist behind many award-winning films, TV series and documentaries, lowered a hydrophone in Pollardstown Fen, revealing to the world the fascinating symphonies taking place under water.

As a musician as well as scientist, I have already composed music inspired by the live images, which have been released in a series of Quantum Jazz DVDs (available from ISIS website). Tom Lawrence's tracks have encouraged me to go one step further, to mix my music to the natural symphonies and marry that to the images of live organisms.

This workshop is particularly suitable for school children; participants will get the opportunity to see live organisms under the polarizing microscope.







**Susan Alexjander** Composer and sound designer

Susan has a Master's degree in Theory and Composition from San Jose State University in California. Her compositions have been performed throughout the United States, including collaborations with dance companies, filmmakers and sculptors for gallery installations.

In addition to a twenty year university-level teaching career in music, she is an avid presenter of workshops on the physics and metaphysics of sound. Her main love since 1988 has been to research vibrational frequencies from the natural world of molecules, stars, elements, body rhythms, time cycles, water etc., and to translate those patterns into sound. This is motivated by a desire to hear the dance; the sonic landscape in which "everything is, on some level, communicating with everything else."

Her album *Sequencia* is internationally known for pioneering sound based on the molecular frequencies of DNA, and has been featured on major radio stations, galleries and exhibits throughout the world. Her film soundtracks with filmmaker Diana Hobson have been featured in Europe and the US.

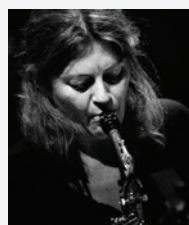
For more, visit: [www.OurSoundUniverse.com](http://www.OurSoundUniverse.com)



**Chee Yoke Ling** Director of Third World Network

Yoke Ling is a lawyer with degrees from the University of Malaya (Malaysia) and Cambridge University (UK). She is the Director of Programmes of Third World Network which has its international secretariat in Malaysia. She is currently based in

Beijing. After teaching public interest law courses at the University of Malaya, she went into full-time NGO work in 1989. She has been very active in policy research and advocacy since the mid-1980s, from the national to global level, focusing on trade, environment and development issues from the perspective of developing countries. As a firm supporter of multilateralism her work involves various processes at the United Nations. She has engaged actively with civil society groups and governments in the evolution of sustainable development principles and actions since the 1992 Earth Summit in Rio de Janeiro. Yoke Ling is currently working on issues related to biodiversity and traditional knowledge, biosafety, climate change, and intellectual property in the context of equity and social justice. She is a member of the Reflection Group on Global Development Perspectives, a board member of the Dag Hammarskjöld Foundation and on the Institute of Science in Society board of trustees



**Lotte Anker** Danish saxophonist and composer, among the leaders on the Scandinavian improv/jazz/experimental scene

Lotte, soprano, alto- and tenor saxophonist and composer, is one of the strongest improvisers in the freeform in Denmark, and a very active composer for small groups, big band, chamber, orchestras, and choirs. She is co-leader of the highly acclaimed 12-member Copenhagen Art.

Ensemble and leader of several trios/duos, has numerous collaborations and playing partners; and is constantly on world tours.



**Edward Cowie** Internationally renowned composer, visual artist and naturalist

Edward has a first degree in physics, which also formed a central part of his PhD thesis, *A Special Theory of Related Forms*. Since the premiere of his BBC Prom commission *Leviathan* in 1975, his music has been featured in major festivals all over the world.

He has had more than 30 one-man exhibitions in 7 countries and his paintings and drawings are in public and private collections worldwide. He has recorded and performed as a pianist in several countries and conducted orchestras and ensembles in Germany, the United Kingdom and Australia. His music is recorded on Hyperion, NMC, Metier, Brain Music, UHR labels and published by Schott and United Music Publishers.

Also holding a doctorate in music, Cowie has held professorships in the USA, Germany, UK and Australia. His BBC TV2 film on Leonardo won the Prix Italia in 1985 for *Best Arts Documentary*. He was appointed the first Composer in Association with the BBC Singers in 2003, and in the same year, the first Artist in Residence with the Royal Society for Birds for 3 years. He is much in demand as a public speaker, having given The Ruskin Lecture at Oxford and The Gertrude Langer Memorial Lectures in Australia. More at [www.edward-cowie.com](http://www.edward-cowie.com)

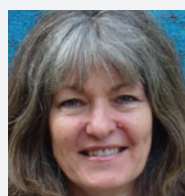


**Martin Chaplin** Water chemist

Martin graduated in Chemistry from the University of Birmingham in 1967. Over the following three years he completed a PhD on the structure and biology of glycans on human follicle stimulating hormone. After two years teaching chemistry at Bunda College of Agriculture University of Malawi, East Africa, he returned to Birmingham University as a Faculty Research Fellow to continue work on the glycoprotein hormones and to start some enzyme technology research. His interest in these research areas continued during a lecturing post in the Biochemistry Department of Leeds University and a four-year seconded post at the University of Ghana, West Africa. Since 1985 he has been at London South Bank University, where he successfully mentored 25 PhD students, and is now Emeritus Professor of Applied Science.

Martin's interest in water developed throughout his career but took a dramatic turn when he was preparing lectures on the structure of glycans in aqueous solution, and considered how the structure of water might affect the structure of glycans. In 1999, he proposed an original hypothesis on the structuring of water that agreed with all the then current data, but was not discovered by x-ray scattering until more than two years later.

He is also well-known as author and webmaster of an extensive website on water <http://www.lsbu.ac.uk/water/>.



**Heather Cowie** Artist

With a first degree in Geology and Post graduate diploma in Computing, Heather spent many years living and working in isolated areas of Australia and South Africa (with a short stint in the sub-Antarctic). Her fascination with the way nature performs, whether in its multitudinous formal variation, or in its amazing repertoires of colour, sound and shaped-action, inspired her scientific investigations in the field, and provided an expansive experiential resource for her future arts practice.

She started exhibiting in the late 80s, and returned in 1991 to study for a Masters of Creative Arts at James Cook University in Australia, which gave her a platform to explore the relocation of natural sound and musical forms into visual correspondences.

After moving to the United Kingdom in 1995, she set up her studio near Dartmoor National Park and began exhibiting at galleries across England. Her art has always been a statement about, and manifestation of, her relationship to the natural world.





**Dennis Tim Crowe** Veterinary surgeon, educator, inventor

An inventor of over 50 surgical and emergency/critical care procedures used worldwide, Tim has practiced as a board certified veterinary surgeon for 32 years, concentrating on nutritional support, resuscitation and traumatology; and within the past 20 years on hydration and its profound effects on animal patients. He is Chief of Surgery and Critical Care at the Regional Institute of Veterinary Emergencies and Referrals in Chattanooga, Tennessee, active in the College of Public Health at the University of Georgia's Institute of Health Management and Mass Destruction Defense, and is also a certified fire-fighter and volunteer.

Tim is a founding member of the American College of Veterinary Emergency and Critical Care; a Fellow of the American College of Critical Care Medicine active in the Program Committee of the Society of Critical Care Medicine; and a member of the American College of Hyperbaric Medicine and Medical Director of the Hyperbaric Veterinary Medicine. He has more than 500 refereed and non-refereed articles, and given over 1 000 invited lectures throughout the world.

He has been honoured with the most prestigious award from the Veterinary Emergency and Critical Care Society in recognition of his pioneering work in both human and veterinary medicine.



**Joe Cummins** Environmental scientist and geneticist

Professor Emeritus of Genetics at University of Western Ontario, and Distinguished Fellow of the Institute of Science in Society, Joe gained his PhD from the University of Wisconsin, and carried out postdoctoral research at Edinburgh University, the McArdle Cancer Institute, University of Wisconsin, and The Karolinska Institute, Stockholm followed by academic appointments at Rutgers University and University of Washington. His research was primarily in the area of RNA and DNA in the cell cycle until the 1970s and 80s, when his focus turned to the environment and the effects of pollution on genes. He prepared reports on water and air pollution in Canada, and served on the board of directors of Greenpeace Canada. Cummins became critical of genetic engineering through articles and lectures beginning in the 1980s, and participated in many government reviews and public meetings. He was a founding member of ISIS, and has written innumerable, critical, and widely acclaimed reports for ISIS since 1999.



**Emilio Del Giudice** High energy and quantum field theorist

Born on 1 January 1940 in Naples, Italy, Emilio is now retired from the position of Senior Scientist at the Italian Institute for Nuclear Physics. He has done research at MIT (Cambridge, USA) and at Niels-Bohr Institute in Copenhagen. A theoretical physicist whose main interests are quantum field theory and physics of collective and coherent processes, he has also investigated the structure of liquid water, with particular reference to living matter.



**Julian Haffegge** ISIS webmaster, musician, composer

Julian Haffegge studied physics at the University of Essex before joining Mae-Wan Ho's research team in 1993. He obtained an MPhil on the effect of electromagnetic fields in aligning collagen fibres during self-assembly.

Julian was a founding member of the Institute of Science in Society; he created its website and has been managing it ever since. The website is very popular, and is archived by the British Library as part of national documentary heritage. He is also productions editor of the quarterly magazine *Science in Society*.

Julian has always been a keen musician, playing and mixing numerous wind, string and percussion instruments. He has played and recorded with many musicians, both as a band member and session musician, performing widely throughout UK, Europe and the USA.



**Peter Fisher** Homeopath and Physician to Her Majesty the Queen

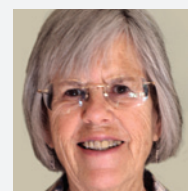
Peter Fisher is Clinical Director and Director of Research at the Royal London Hospital for Integrated Medicine (RLHIM), part of the University College London Hospitals NHS Foundation

Trust and Europe's largest public sector centre for integrated medicine. He is a member of the Expert Reference panel the Member, UK National Institute of Health and Clinical Excellence (NICE), and Physician to Her Majesty Queen Elizabeth II. He is a member of WHO Expert Advisory Panel on Traditional and Complementary Medicine, currently involved in drafting its Traditional and Complementary Medicine Strategy for 2014-2023

Peter is also Editor-in-Chief of Homeopathy published by Elsevier, the only journal dedicated to the topic indexed in Medline and has an Impact Factor. He chairs ISCHI, the International Scientific Committee for Homeopathic Investigations and the International Congress on Complementary Medicine Research to be held in London in April 2013. He also leads the Complementary and Alternative Medicine Library and Information Service (CAMLIS), which provides unique access to the CAM literature.

His work centres on responding to the problems of health care, including 'effectiveness gaps', cost and side effects, by integrating the best of traditional and complementary medicine. He is an active clinician, specialising in homeopathy and rheumatology.

Peter has conducted numerous research projects in integrated and complementary medicine; his interest triggered by a visit to China during the Cultural Revolution, while still a medical student at Cambridge University.



**Kathy Haffegge** ISIS artist working in textiles

Kathy loves to transform plain fabrics into patterns and textures, creating new designs with a variety of hand stitches using dyes, paper, metals, wires, paint, and embossing powders.

She did a City and Guilds course in creative embroidery, and have been showing and selling her work and leading workshops in the Milton Keynes area for 12 years. For the past few years, images of her works have appeared frequently in the pages of *Science in Society* magazine.

She is a member of the Stacey Hill Stitchers, a group that meets in and supports the local Museum of Agriculture. The group's activities include making historic costumes, samplers, fund-raising and teaching sewing skills to local children.





**Stevo Hausheer**, Singer/Songwriter/Musician

Steve went to Texas Christian University's Van Cliburn School of music, then shifted to audio engineering and radio. While at radio station WBAP - then clear channel leader of the Country Western musical world - he earned his first pro gig, picked up by Box Car Willie playing rhythm guitar on his Southwest tour.

Steve began writing songs, originally with Curt Powell and then Ken Lewis to publish several tunes together under Endpoint

Publishing, Chicago, IL. He also found work as a bass player, gigging with several cover bands, playing the summer festival circuit and the Chicago bar scene. Steve formed his first original band, Third Coast Wave; and along the way met Jimmy Rogers, who convinced him to sing his songs, became his vocal coach, and collaborated on several tunes as The JR Project until Jimmy's passing. Steve then formed Bitterroot Band to bring his catalog to life (BitterRootBand.com).

Most recently, Steve performed in China, singing at The Cotton Club in Shanghai and also with The Tonics, a band he formed while working as a visiting professor at Wuhan University's International Summer Session (source of his Stevo moniker). His Bitterroot Band won The Underground 2012 Talent Search in Chicago. Steve is a frequent special guest with Chicago's best known bluesmasters (<http://www.facebook.com/steven.hausheer>).



**Adrian Ho** Founding partner of Zeus Jones

Zeus Jones is an innovative advertising company that believe actions speak louder than words, that modern brands are defined by what they do not what they say.

Adrian was formerly director of strategic planning at Fallon in Minneapolis where he led a department widely recognized as one of the best in the country.

Prior to that, he led planning on HP at Goodby, Silverstein & Partners and served as the lead planner on Microsoft Anderson & Lembke, both in San Francisco.

Adrian's thinking has been recognized by the IPA and EFFIEs. He is a former AAAA account planning committee member and co-chair of the national planning awards program.



**Mae-Wan Ho** Scientist/artist and Director of ISIS

Mae-Wan is well-known for pioneering work on the physics of organisms and sustainable systems, also a staunch critic of neo-Darwinian theory and the biotech industry. As Director and co-founder of the Institute of Science in Society to reclaim science for the public good, she has received several awards and recognition,

and often asked to advise governments, non-government organisations and international agencies.

Her life-long ambition is to integrate sciences, arts and the humanities in a coherent way of knowing, understanding, and living. She started painting over 40 years ago, and finally found her element in water. Within a year, she wrote a book 'Living Rainbow H<sub>2</sub>O' (2012) on the latest quantum physics and chemistry of water in living organisms, and produced dozens of energetic new paintings on the subject. It occurred to her that the time was ripe for an art/science/music festival; she named it "Colours of Water". The response has been fantastic.

Much in demand as a public speaker and a prolific writer, Mae-Wan has more than 170 scientific publications, over 500 popular articles and essays across many disciplines, and 15 books including *Beyond neo-Darwinism: An Introduction to the New Evolutionary Paradigm* (1984); *The Rainbow and the Worm, the Physics of Organisms* (1993, 2<sup>nd</sup> ed.1998, 3<sup>rd</sup> ed, 2008); *Genetic Engineering Dream or Nightmare?* (1998, 1999, 2007); *Food Futures Now* (2008); *Green Energies, 100% Renewables by 2050* (2009), *Quantum Jazz Biology\*Medicine\*Art* (2011).



**Jenny Howe** Jazz singer, actor

Jenny worked with NYJO and Shakatak in the mid/late 1990s, featuring on the NYJO album Nite at Ronnies, and now has a string of TV, film and dance track recordings to her credit.

Film soundtracks include The Brylcreem Boys, starring Gabriel Byrne, Dream, Hot Gold, and LA Sheriff's Homicide, while dance tracks include "Heaven On Earth" for the production outfit Shut Up And Dance, and two co-written numbers on the album Downtime by the band Playpen. She has also worked as an actor and voiceover artist, playing the part of "Mrs Croucher" in Spike Milligan's film Pukoon, starring Elliot Gould and Sir Richard Attenborough, and doing voiceovers in the BBC drama Ballykissangel and for National Geographic. As a jazz singer, she has appeared at major London venues, including the Queen Elizabeth Hall, and has a long-standing collaboration with composer/pianist/arranger Chris Lee, featuring on their album Second Take, which they showcased at Bury Jazz Festival in 2009.



**Djuro Koruga** Nanotechnologist and bioengineer

As professor and Head of NanoLab and Biomedical engineering in the University of Belgrade, Serbia, Djuro has been principle investigator on 12 government and 8 industrial biomedical engineering projects since 1985. While in the USA (1990-1997) he worked on projects for the NSF, NASA, and DARPA, and in the University of Arizona. He participated in the first U.S Army Natick Research Symposium on STM/AFM in 1993. He holds patents for many inventions, and was awarded the Golden Medal Nikola Tesla in 2003. He has published about 120 scientific papers and several books, including *Fullerene C60: History, physics, nanobiology, nanotechnology*, North-Holland (Elsevier), 1993.

Since 2002 he has been doing research in water science and nanotechnology. In last few years he organized three international conference on *Water based nanomedicine*. Paramagnetic/diamagnetic property of water is his primary interest in water research.



**Eric Landen** Corporate ecosystem economics consultant

Eric runs a global management consulting firm specializing in corporate ecosystem economics. He helps big business and government account for the financial and social value of nature when making decisions. Corporate and public-sector decision makers often treat nature like it's worthless, when actually it's priceless... He is on the board of the Water Ethics Network and a member of the Society for Conservation Biology's Religion and Conservation Research Collaborative, which advises global governmental and religious policymakers on issues at the intersection of religion and environmental conservation.





**Chris Lee** Jazz pianist, composer, and research scientists/lecturer in psychology and linguistics

Chris studied at the Royal College of Music, London, and then at the University of Sussex, where he obtained a PhD in experimental psychology. His musical development saw him move from an accomplished classical player in the early 1980s to the jazz world, where he has built a reputation as a performer, arranger, and composer. He has performed with some of the leading singers on the UK jazz scene. His arrangements of well-known rock/pop standards feature on two critically acclaimed albums, "Alternative Arrangements" recorded with singer Anton Browne, and "Second Take" recorded with singer Jenny Howe. He writes both songs and film scores, the most recent for the short documentary, "L'esprit de l'escalier", produced and directed by Searle Kochberg. His compositional abilities earned him a place in the 2009 BBC2 programme "Classic Goldie", where he was featured alongside conductor Ivor Setterfield assisting drum and bass artist Goldie in composing a classical piece for the Family Prom on the theme of evolution.

As a research scientist, he has published work in the area of rhythm perception in music and rhythmic organization in language. He is currently a visiting lecturer on the MSc Music, Mind and Brain programme at Goldsmiths, University of London.



**Shui-Yin Lo** Particle physicist and researcher in quantum health

Shui-yin obtained his Ph D (1966) from the University of Chicago, and was successively Prof of Physics at University of Melbourne, Australia; Prof of Research in Chinese Medicine at American University of Complementary Medicine; Director of Quantum Health Research Center, Pasadena, California; Visiting Faculty at Department of Chemistry, Caltech, 1994-1998; Also Visiting Faculty at more than ten international centres of excellence, including Oxford University, Free Berlin University, Stanford, McGill University, Academia Sinica of Beijing. Professional publications include 4 books, over 100 peer-reviewed articles and more than 30 patents. Popular publications include *Double Helix Water* (2009); *Biophysics basis for acupuncture and health* (2004); and columnist for *Acupuncture Today* (2003-present).



**Jim Oschman** Pioneer of energy medicine

Jim Oschman founded Nature's Own Research Association to counter the unsustainable exploitation of our planet's resources. But a search for the missing pieces in modern medicine led to pioneering work in energy medicine, for which he is world renowned. This followed a successful career as a cell biologist with publications in some of the leading peer-reviewed scientific journals.

Jim developed scientific insights in his book *Energy Medicine: the scientific basis that can help therapists from every tradition understand and advance their work and explain it to others*. It also provides a theoretical basis for empirical investigations into the physiology and biophysics of energy medicine for serious scientists.

Jim got his first and second degrees in Biophysics and Biology from the University of Pittsburgh, and has worked in major research labs around the world. To learn about the theories and practices of CAM, he has both taught and attended classes at around the world, and personally experienced a wide range of bodywork techniques. He has gained recognition as President of the New England School of Acupuncture and received a string of awards including a Distinguished Service Award from the Rolf Institute, the Founders Award from the National Foundation for Alternative Medicine, and a Distinguished Service Award from the Second International Fascia Research Congress. He researches and writes in Dover, New Hampshire, and lectures world-wide.



**Joe Pettitt** bass player

Joe graduated in 2003 from Trinity College of Music after winning the Henley Festival Prize for Jazz and the Archer Big Band Scholarship. He is now one of London's most in demand freelance bass players working in a variety of fields.

Big band and orchestral work includes the Royal Liverpool Philharmonic Orchestra, John Wilson Orchestra, Ronnie Scott's Big Band, Back to Basie Orchestra, Len Phillips Big Band and Glenn Miller Orchestra UK. Work with jazz artists includes Claire Martin, Clare Teal, Elaine Delmar, Dave O'Higgins, Frank Griffiths, Duncan Lamont, Joe Stilgoe and Peter King. Session/broadcast credits include Betty Blue Eyes (cast album), Lend Me A Tenor (cast album), Michael Ball (Past & Present), Love Never Dies (cast album), Penelope (film soundtrack), Brendan Cole Live & Unjudged (DVD), David Soul (ITV), John Wilson Orchestra (ITV) and Gary Williams (BBC). West End show and cabaret credits include Top Hat, Singin' In The Rain, Privates On Parade, Betty Blue Eyes, Carousel, High Society, Oliver, Fiddler on the Roof, Chicago, Anything Goes, Bruce Forsyth, Des O'Connor, Ronnie Corbett, Cliff Richard, and Richard Stilgoe.

Joe also plays in the swing band King Candy & The Sugar Push and funk band Payback. Since 2009, he has been the musical director of the Len Phillips Big Band.



**Gerald Pollack** World's foremost water researcher

Gerald Pollack received his PhD in biomedical engineering from the University of Pennsylvania in 1968, then joined the University of Washington faculty and is now Professor of Bioengineering.

His interests have ranged broadly, from biological motion and cell biology to the interaction of biological surfaces with aqueous solutions.

His 1990 book, *Muscles and Molecules: Uncovering the Principles of Biological Motion*, won an "Excellence Award" from the Society for Technical Communication; his more recent book, *Cells, Gels and the Engines of Life*, won that Society's "Distinguished Award." His forthcoming book *The Fourth Phase of Water: Beyond Solid, Liquid, and Vapor* will be published in late 2012.

Pollack received an honorary doctorate in 2002 from Ural State University in Ekaterinburg, Russia, and more recently named an Honorary Professor of the Russian Academy of Sciences, and Foreign member of the Academy of Science and Arts of the Republic of Srpska. He received the Biomedical Engineering Society's Distinguished Lecturer Award in 2002. In 2008, he received the University of Washington Faculty Lecturer Award. Pollack is a Founding Fellow of the American Institute of Medical and Biological Engineering and a Fellow of both the American Heart Association and the Biomedical Engineering Society. He is also Founding Editor-in-Chief of the journal, *WATER*, and recently received an NIH Director's Transformative R01 Award. He was also the 2012 recipient of the Prigogine Medal.



**Li Poon** ISIS artist

Li Poon from Toronto, Canada, has been the resident artist at *Science in Society* since the beginning. His works has appeared on and inside the covers of the magazine so frequently that they have become the magazine's trademark.

Li has both trained and worked in science and engineering before turning to painting. He began traditional Chinese painting when he was 18; gradually experimenting and developing a unique fusion of indigenous European, Chinese and Meso-American styles, yet going well beyond them. His recent works are bold, spontaneous and protean; he sees them as intimate dialogues with the continuous creative process that is our universe.





**Matt Poon** ISIS artist

Matt Poon grew up in Hong Kong, pursued engineering studies in Canada, and settled in Australia. He rediscovered his childhood passion for painting six years ago when he was tutored by the late Wenda Ashton of the renowned Ashton family. He experiments with watercolour and charcoal, painting a wide range of subjects including land and seascapes, human figures, wild animals and pets. He has exhibited widely in Australia and won several prizes including the Peoples' Choice Awards of DeeWhy Art & Craft Show four years in a row, 2007-2010, and an Honorable Mention in the prestigious Warringah Art Exhibition 2008. Many of his paintings have a distinctive poetic quality reminiscent of contemporary Japanese water colours. The powerful images he created for the festival are a new venture based on aboriginal water myths that he has clearly taken to heart.

At about the same time that he took up painting, Matt took some lessons in Tai Chi; and says it would make him really happy if he can integrate the Tai Chi movements into his art.



**Stephen Preston** Flautist

Stephen Preston is without doubt the greatest living Baroque flautist, and has recorded and performed all the great baroque concertos over the years. However, in 2002, he embarked on PhD studies into *the influence of a study of birdsong on new techniques for the baroque flute*. This led to the development of radical and far-reaching new techniques and sounds and a system known as *ecosonics*. His association with Edward Cowie is longstanding and in addition to completing his PhD under Edward's supervision, has commissioned and/or performed Cowie's works specially composed for him. His interest in the natural world is deep and enduring.



**Mark Sanders** Drummer/percussionist

Mark has played with many renowned musicians from around the world in duos, quartets or trios, including Evan Parker, Peter

Brotzmann, Derek Bailey, Myra Melford, Paul Rogers, Henry Grimes, Roswell Rudd, Okkyung Lee, Barry Guy, Tim Berne, Otomo Yoshihide, Luc Ex, Ken Vandermark, Sidsel Endresen and Jean Francois Pauvrais, Wadada Leo Smith, Charles Gayle, Sironne and William Parker.

New collaborative projects include 'Riverloam Trio' with Mikolaj Trzaska & Olie Brice, 'Asunder' with Hasse Poulsen & Paul Dunmall, duos with John Butcher and DJ Sniff, 'Statics' with Georg Graewe & John Butcher and trio with Rachel Musson & Liam Noble

Mark and John Edwards play as a rhythm section with many groups including Trevor Watts Quartet, 'Foils' with Frank Paul Schubert and Matthias Muller, Mathew Shipp's 'London Quartet' also playing with Fred Frith, Wadada Leo Smith and Shabaka Hutchins among many others.

Christian Marclay's 'Everyday' project includes Mark with Christian, Steve Beresford, John Butcher and Alan Tomlinson. He also works regularly in the projects of Mikolaj Trzaska, Gail Brand, Paul Dunmall, Peter Jaquemyn, and Simon H Fell.

Mark has performed in the USA, Canada, Brazil, Japan, Morocco, South Africa, Mozambique and Turkey, playing at many major festivals including, Nickelsdorf, Ulrichsburg, Glastonbury, Womad, Vancouver, Isle of Wight, Roskilde, Berlin Jazz days, Mulhouse, Luz, Minneapolis, Banlieue Bleues, Son D'hiver and Hurta Cordel. He has released over 120 cds



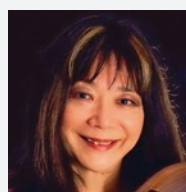
**Peter Saunders** Mathematician, co-Director of ISIS

Professor Emeritus of Applied Mathematics at King's College, London University, author of more than 100 papers and the book, *An Introduction to Catastrophe Theory* (1981), also coedited *Beyond neo-Darwinism, the Epigenetic Approach to Evolution* (1984), and *Theoretical Biology, Epigenetic and Evolutionary Order from Complex Systems* (1990). He has worked on complex systems for nearly 40 years, in particular, organisms as dynamical systems, global warming and diabetes. He has also written several key papers on the precautionary principle. He is a former Council member and Education Committee chair of the London Mathematical Society and currently Vice-president of the UK Parliamentary and Scientific Committee.



**Eva Sirinathsinghji** ISIS researcher and staff writer

Eva is researcher at Institute of Science in Society (ISIS) and staff writer for its quarterly magazine *Science in Society*. She obtained her B Sc Biology (2:1 Hons in Neuroscience) from Edinburgh University in 2005, and Ph D in Neurogenetics from King's College, University of London in 2010, and has continued part-time lab work while she interned with ISIS February-August 2011. She is passionate about going beyond the reductionism to the science that serves society, focusing on the effects of corporate science on people's health and welfare.



**Mifune Tsuji** Violinist and professor

Mifune Tsuji is one of the world's leading violinists, specialising in contemporary music especially the music of Xenakis. She is a professor of violin at Anglia University. Her repertoire is nevertheless vast and varied, from Bach to the music of today. She has worked as an improviser for many years including dates with Earth Music Unlimited.



**Rod Youngs**, drummer and composer

Rod's musicianship personifies diversity, authenticity, and distinctiveness. Whether playing traditional jazz, world music, or urban contemporary, he seamlessly moves from one genre to another, always preserving stylistic conventions while bringing creativity and individuality.

A native of Washington D.C., Rod began his formal training as a teenager in the DC Youth Orchestra program and continued his studies at Howard University, where he received a Bachelor of Music in Applied Percussion. He also studied with former principal timpanist of the National Symphony Orchestra Fred Begun, and in 1985 was chosen to study jazz performance at the Eastman School of Music in Rochester, N.Y. under the tutelage of Keith Copland.

Over the past two decades, Rod's career reflects his love and passion for the art of music. He has garnered a wide variety of work from concerts and recordings to sessions for radio, TV and film, and has performed/recorded with a formidable array of artists including, Abdullah Ibrahim, Lee Konitz, Hugh Masekela, Gil Scott-Heron, Natalie Cole, Don Braden, Ernest Ranglin, Denys Baptiste, Julian Joseph, Mica Paris, Courtney Pine, Jon Hendricks, Ronnie Laws, Jazz Jamaica All Stars and David Murray.

In addition to performing, Rod is actively involved in music education. He has served as an instructor at the Glamorgan University jazz course and currently provides private instruction for students of all levels and ages. He also conducts performance workshops throughout the UK for the Tomorrows Warriors organization, Serious International Music Producers, The Round House, and the Planet Drum School.





**Important Landmarks**

- A Menier Chocolate Factory and Gallery (the venue: there is also a restaurant on the premises)
- B Most convenient exit from Underground (follow sign to “Borough High Street, West side”)
- C London Bridge Railway Station

**Restaurants**

There are lots of restaurants within easy walking distance and at varying prices. The best places to look are Borough Market and Borough High Street. Like most eating places in central London, these can get crowded at 1pm. We’ve tried almost all of these and they were fine. There are also many stalls in Borough Market that sell takeaway food. Just a bit further up the river (i.e. to your left on the map) are the Globe Theatre and the Tate Modern Gallery, both of which also have places to eat.

- 1 **Anchor Bankside** (an old pub, food not too expensive)
- 2 **Cafe Brood** (paella &c, not expensive)
- 3 **The George** (the last galleried pub in London – you get to it from Borough High Street)
- 4 **Just Mango Tree** (Indian)
- 5 **The Market Porter** (pub with restaurant upstairs)
- 6 **Nandos** (speciality is peri-peri chicken; a well run chain and good value)
- 7 **Tapas Brindisa** (tends to be crowded at 1pm)
- 8 **Tas** (Turkish chain; good value)
- 9 **Tito’s** (Peruvian)
- 10 **Wagamama** (Japanese; ramen house chain)
- 11 **Brew Wharf** (pub that brews its own beer; not too expensive)
- 12 **Luncheonette** (takeaway only but cheap)
- 13 **Bunch of Grapes** (pub with food)
- 14 **Spiazzo** (cafe)
- 15 **Fretelli** (cafe)

**Hotel Guide**

For participants coming from abroad or outside London, we suggest the following hotels. The first two are within walking distance of the venue and the third a short underground ride away. Rates vary from ~ £75 to £120 per night, which are very reasonable for London. Those who do not mind paying more will find many more choices either close to the venue or in other parts of London.

Ibis Styles Southwark Rose, London Bridge, Southwark, SE1 9HH, (across the Road from Menier Gallery): <http://www.booking.com/hotel/gb/southwarkrose.en.html>

Ibis London Blackfriar, 49 Blackfriars Road SE1 8NZ (walking distance from Menier Gallery): <http://www.travelrepublic.co.uk/hotels/united-kingdom/london/waterloo/ibis-london-blackfriars.html>

Tune Hotel King’s Cross, 324 Gray’s Inn Road, London WC1X 8BU (near King’s Cross station, a short underground ride away from London Bridge on Northern Line southbound): <http://www.tunehotels.com/our-hotels/kings-cross-london>