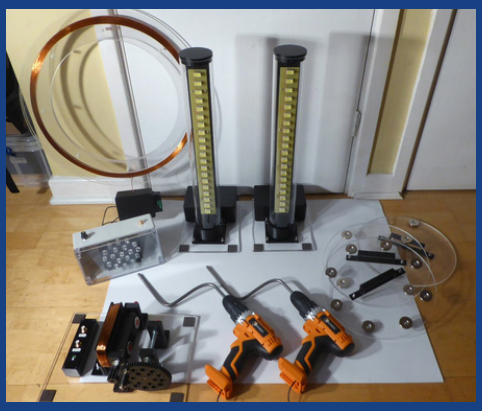
THE CREATIVE SCIENCE CENTRE

SUMMER 2025



newsletter

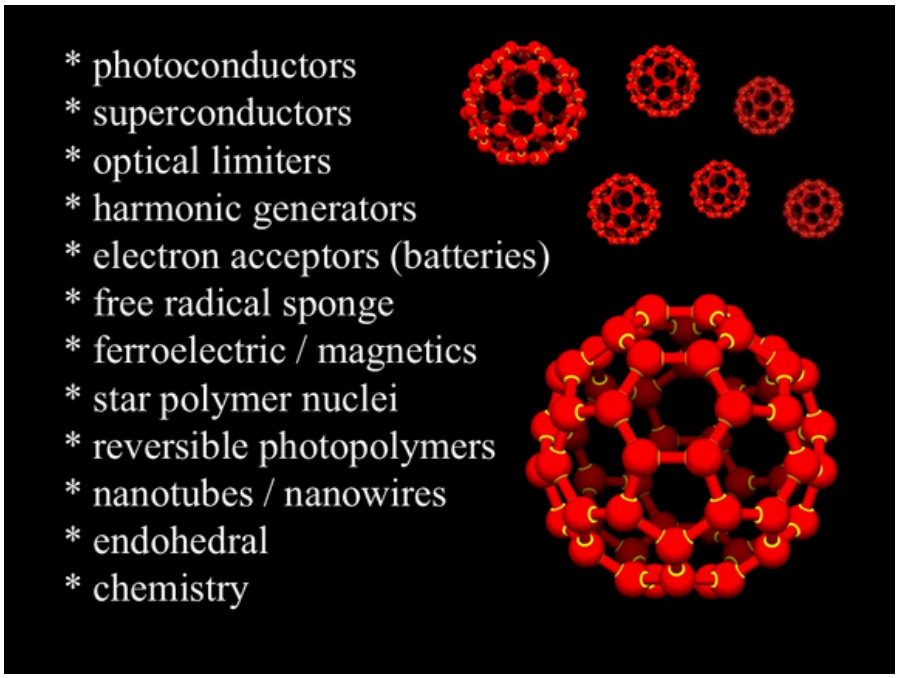
www.zoomscience.co.uk

Dr Jonathan Hare is a freelance scientist and science communicator. He presents science talks and workshops on-line and in person. He writes scientific and technical articles and designs and builds scientific equipment.

IN THIS ISSUE

Buckminsterfullerene is 40 years old !

C60, Buckminsterfullerene (Buckyball) was discovered in 1985 and led to a revolutioin in carbon chemistry and to the 1996 Nobel prize. I was lucky to be involved with this pioneering work in Sir Harry Krotos group at Sussex University. I have presented over 400 C60 workshops over the years to all ages. Book me for a Buckyball workshop today ! (more details on next page)



⁎ talks and workshops

⁎ articles ⁎ projects ⁎ resources

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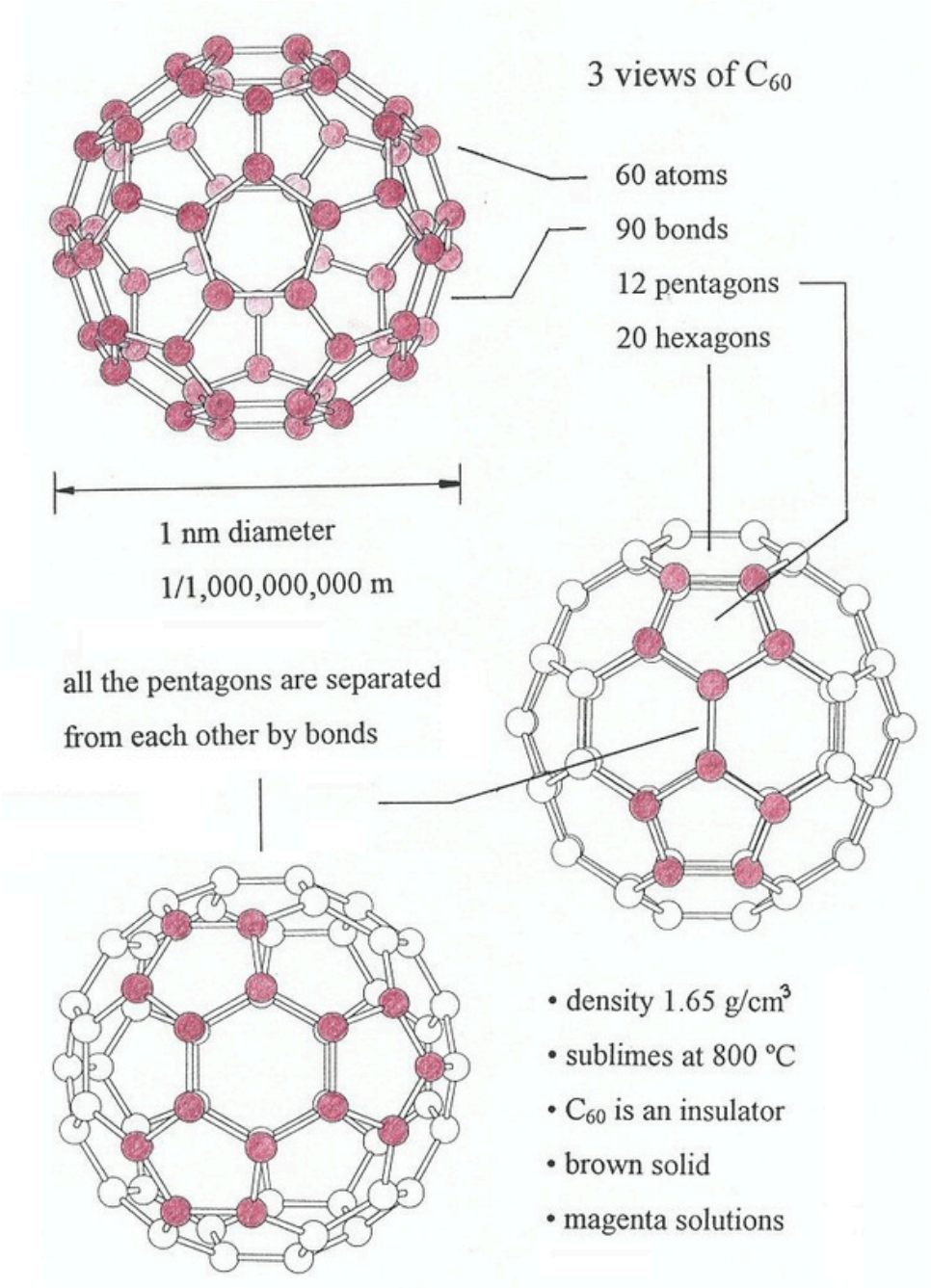


Buckminsterfullerene
60 C atoms
12 pentagon rings
20 hexagon rings
90 bonds
(30 double + 60 single)

MAIN IR BANDS
531 cm-1
577
1185
1430

MAIN UV BANDS
213, 257, 329 nm

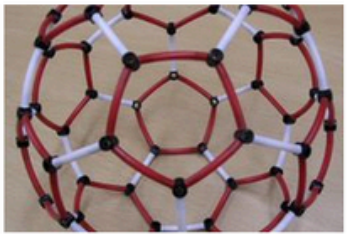
C60+ ion in space DIB
958 nm
963 nm

C13 NMR
d=143 ppm
(in benzene)

BUCKYBALL TALKS & WORKSHOPS

This workshop deals with the discovery, structure and properties of C60, Buckminsterfullerene (work which lead to the 1996 Nobel Prize for Chemistry). C60 is the head of a family of amazing carbon structures - the fullerenes. Jonathan Hare was part of the pioneering Sussex team that developed ways of making the Fullerenes. The workshop takes us from the tiny world of atoms to the vast world of astronomy. We shall also explore some simple maths connecting the symmetrical objects that we come across along the way. The W/S includes constructing (and keeping) a molecular model of Buckminsterfullerene.

email: jphcreativescience@gmail.com



The Discovery of C60

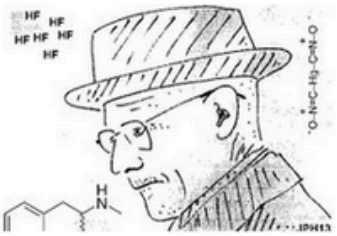
The story of the discovery, structure and properties of C60, Buckminsterfullerene (work which lead to the 1996 Nobel Prize for Chemistry). Jonathan Hare was part of the pioneering Sussex team that developed ways of making the Fullerenes. The story will takes us from the tiny world of atoms to the vast worlds of astronomy.

Key curriculum topics: chemistry, physics, astronomy

Hollywood Science

Based on his BBC Hollywood Science TV series with actor Robert Llewellyn, Jonathan will explore the intriguing and sometimes unexpected science behind some of Hollywood's classic movies and stunts.

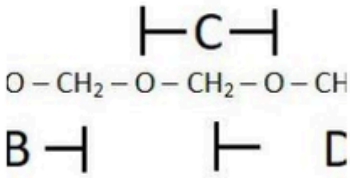
Key curriculum topics: chemistry, physics, mathematics



Breaking Bad

In this talk Jonathan will explore the science in the Breaking Bad series, the use and abuse of meth amphetamine, acid bath disposal of bodies, exploding crystals, poisonous gases and much more from the series.

Key curriculum topics: chemistry, physics, mathematics



A Comet tail

This talk looks at data sent back by the Giotto PICCA probe that flew through the tail of comet Halley. During our re-analysis we discovered how good scientists can make mistakes through wrong assumptions and how essential (but challenging) it is to have clear thinking in science.

Key curriculum topics: chemistry, physics, astronomy

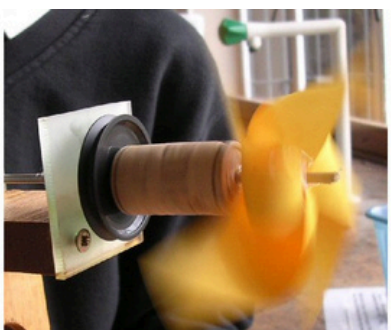
TALKS & WORKSHOPS

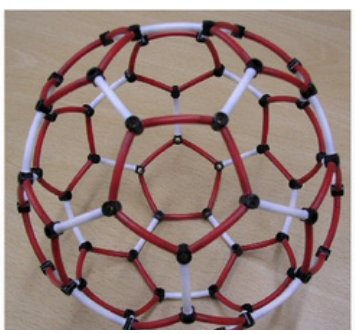
I present a range of talks and workshops to children of all ages including the popular Hollywood Science and Breaking Bad talks and the C60 Buckminsterfullerene workshops - so far this year we have made over 790 Buckyball models with as many children !

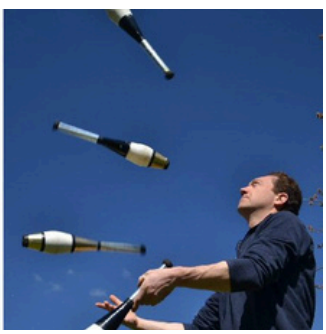
The talks and workshop are usally 50 min long (although can be adapted to suit your needs) and can be delivered in person or online.

For details see: www.zoomscience.co.uk
email: jphcreativescience@gmail.com

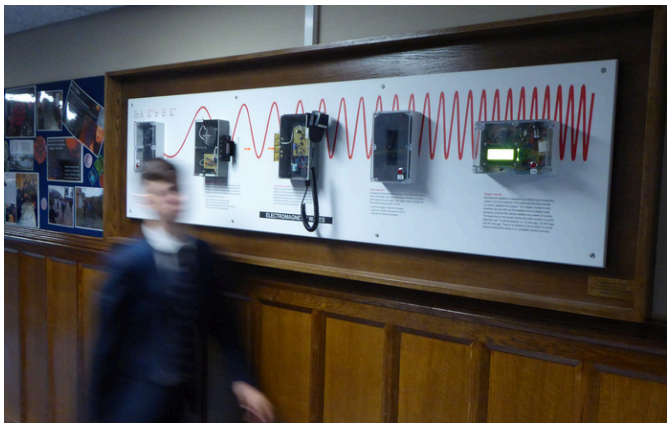
screen grab of some of my talks from my website (see links below)





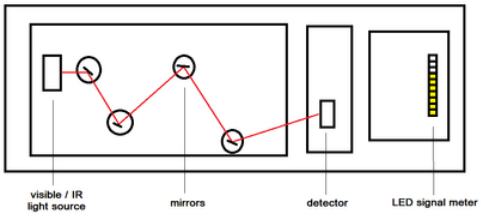


I can build scientific equipment for your laboratory, classroom, or exhibition space. See examples below:



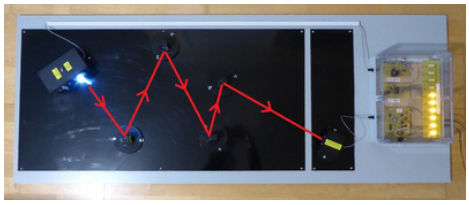
The Electromagnetic Spectrum (Whitgift School)

A permanent interative display: including a radio transmitter and receiver, UV fluorescence, IR heat camera, light beam communications and logging Geiger Counter experiments.



Light beam demonstration (Whitgift School lab)

Students must skilfully direct a light beam by reflecting and refracting the beam, via a set of moveable mirrors and light pipes, to get the best possible signal from the LED phase sensitive detector. It has easy (visible light) and hard (Infrared light) settings!

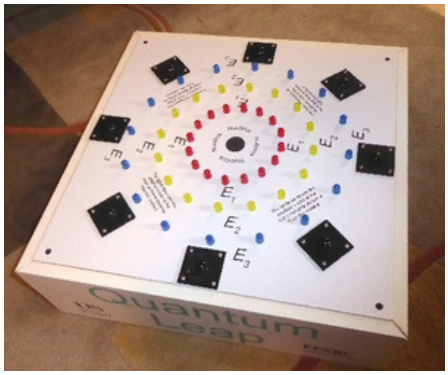


Windmills & Turbines

A set of windmills which participants can use to power various electronic devices (calculators, LED torches, radios etc.). The number of blades and the 'angle of attack to the wind' can be adjusted to understand how to maximise harnessing wind power.

Quantum Mechanics game

With Prof H Cox's group at Sussex University we have developed a 'Quantum Leap' game. Up to 8 students can control the game - only when they hit the correct frequency of button pushing will the LEDs jump to the next 'quantum level' (email me for workshop details).



Here's what people say about my work …..

"Absolutely fantastic! Our kids were buzzing all the way back to Newbiggin. As I mentioned it's more than just Science, it's about role models and aspirations and this visit provided all three and more."
Rob, Newbiggin Middle School, Science Christmas Lectures, Durham

"I had to write to express my appreciation of your commitment to bring Nobel Prize winning science to children's education … my little son Tommy, 5 years old, came home thrilled and truly inspired by the workshop."
Vanessa, NAGC children

"I always try to tell them Chemistry is fun and you managed to convince quite a few – so thank you. Your enthusiasm is great and you work well with the [A-level] students – so please continue your great work promoting science."
Cheryl, Esher College & FSU

"Jonathan is one of the most passionate, enthusiastic and resourceful science teachers our children have had." Iryna, London

"Thank you very much for your outstanding contribution to last week's Science in Action programme for GCSE students. … I hope you could see for yourself that you had an attentive and appreciative audience – quite an achievement when you consider that there were eight hundred 14-16 year olds ... "
Radka, Training Partnership, Institute for Education

"Jonathan's workshops are enlightening, thought-provoking, inspiring and a most memorable highlight of each semester!" Cheryl, High School Teacher

"I just wanted to thank you … it has created a real buzz around the school. The feedback from students and teachers has all been positive … not just the chemistry but the maths and physical problem-solving. I would highly recommend this to any school and hope you will return next year".
Charlotte, Hove Park School

"Thank you very much for the Chemistry in the movies lecture [Hollywood Science and Some Science of Breaking Bad talks]. I know it went down well because I tried to stop a discussion on the amount of viable oxygen in a car tyre for a good 10 minutes before moving on to inter-molecular bonding! Anyway truly appreciated, thanks!"
John Luton, Varndean College