



LIMERICK INSTITUTE
OF TECHNOLOGY
INSTIÚID TEICNEOLAÍOCHTA
LUIMNIGH



Limerick Institute of Technology
Institiúid Teicneolaíochta Luimnigh

Irish Science Teachers' Association
Eol-oídi na hÉireann

54th Annual Conference

*“Science Education in Ireland
- New Frontiers!”*

8th - 10th April 2016

Limerick Institute of Technology
and the Strand Hotel, Limerick

ISTA Annual Conference 2016



Programme of events (second level)	28 – 29
Programme of events (primary science day)	30 – 31
Details of presentations (Friday & Saturday morning)	9 – 17
Workshops (two sessions)	19 – 25
Details of presentations (Saturday afternoon)	27 – 41
ISTA Annual Business Meeting	37
The History of the Science Educator of the Year Awards	39
Final plenary lectures (Sunday)	41 – 43
List of Exhibitors	56
Maps	inside back cover
Programme summary	back cover



ISTA ANNUAL CONFERENCE 2017

Host Branch: Kildare ISTA

Venue: Maynooth University & The Glenroyal Hotel

Date: 7th – 9th of April, 2017

For further details contact:

☎ 085 - 1273620 📧 kwwconference2017@gmail.com

Looking forward to welcoming you to Kildare.



A word of welcome from the Organising Committee

Dear colleague,
The organising committee for the annual conference in **Limerick/Clare** would like to extend a warm welcome to all delegates.

Over the past year we have worked to create a programme to cater for all tastes and hope we have succeeded in doing so.

We are so fortunate to have access to the incredible facilities here in Limerick Institute of Technology and we thank them for allowing us to host the 54th annual conference on their premises.

A special thank you also to our very kind and generous sponsors who have supported us throughout the planning process and without whose help we would not have been able to provide such a wide and varied programme of events.

We wish you an enjoyable, energising and fun weekend.

Maria Sheehan

Chair of the Organising Committee

Anne O'Dwyer – Mary Immaculate College, Limerick		Kate O'Brien – St Patrick's Secondary School, Gardiner's Hill, Cork		Miriam Hamilton – Mary Immaculate College, Limerick	
Brian Clarke - Coláiste Iósaef Community School, Kilmallock		Maria Sheehan – St. Caimin's Community School, Shannon		Patrick Dundon – Castletroy College, Limerick	
Diane Condon – Ardscoil Rís, Limerick		Marie Walsh – Limerick Institute of Technology		Peter Childs – University of Limerick	
Eleanor Walsh – Schools' Business Partnership		Michelle Herbert – Hazelwood College, Co. Limerick		Una Leader – Lifetime Lab, Cork	

Welcome by the Honorary President of ISTA

Dr. Conor O'Brien



On behalf of the Irish Science Teachers Association, I would like to extend a very warm welcome to the 54th Annual Conference with the theme 'Science Education in Ireland - New Frontiers', hosted this year at Limerick Institute of Technology. It is a particular pleasure for me to invite you to my original home patch, having grown up nearby in Ennis, Co. Clare and subsequently worked for a good part of my career initially with Syntex (now Roche Pharma) in Clarecastle and later with Schwarz Pharma (now UCB) in Shannon.

As usual the Conference is an interesting and eclectic mix of theory and practice to inform, guide and stimulate new ideas and approaches in the teaching of science. The Annual Conference provides colleagues with opportunities to explore the latest updates on the science curriculum, to hear wonderful speakers, to develop practice and to network with colleagues from across the country.

This year's Annual Conference is an opportunity for all ISTA members to explore a wide range of topics including 'catching' comets in space with Professor Mark McCaughrean of the European Space Agency and being inspired by US rocket scientist Amber Gell from Lockheed-Martin NASA. Other more down to earth frontiers in science include Nanotechnology by David Katz and the potential for treatment of diseases such as cancer by Molecular and Cell Biology by Dr. Patrick Kiely from UL.

The workshops offer wide-ranging possibilities of getting a 'hands-on' practical know-how for Biology, Physics and Chemistry for you to take back to your school.

I am particularly happy that there is a Primary as well as a Post Primary Programme as I believe the seed of interest in science and exploration falls on very fertile ground with the younger age group.

Many months of planning have gone into this event by the Annual Conference Committee and on your behalf, I would like to thank them for their efforts. The committee has succeeded in attracting an excellent panel of speakers and I hope that it will be of value to you both personally in your teaching activities.

In my first year as President of ISTA, I continue to be further impressed with the engagement and support of all members of ISTA in advancing science education. It is a tribute to all the membership that the voluntary efforts of the local branches and the national executive fosters such an active, dynamic and progressive organisation. I would urge all ISTA members to support your local group and get involved to shape the direction of ISTA.

Our thanks go to our sponsors and exhibitors who make it possible for the conference fee to be more affordable.

I do hope you have an excellent conference in Limerick and that it inspires and motivates you for a successful and fulfilling year ahead.

Dr. Conor O'Brien
President ISTA



Join the Health and Safety Authority's workshop at the ISTA Conference.

Topic: Laboratory Safety

Workshop times: 12:10-13:00 and 15:20-16:10 on Saturday, 9th April

Key items to be covered are:

- chemical awareness and management to ensure safety in the science laboratory
- changes in the rules for hazard labelling of chemicals and accompanying safety data sheets
- practical advice on managing chemicals in the laboratory, safe decanting, use and storage

For more information on chemical safety check out web: www.hsa.ie/chemicals

Check out our short e-learning course for Science Teachers on managing safety in the laboratory at



Tel: 1890 289 389

Chairman's welcome

Stephanie Leonard



Dear colleague,
I would like to take this opportunity to welcome you to the 2016 ISTA Annual Conference and ABM. We are delighted to be back in Limerick and are indebted to Limerick Institute of Technology for opening their doors to us. I would also like to extend a warm 'céad míle fáilte' to all of our international delegates, in particular representatives from ASE-NI, ASE-UK and ASE – Scotland. We are delighted this year to have a representative from the International Council of Associations for Science Education (ICASE) and hope that you enjoy your time here. We look forward to developing closer links with all of our international colleagues.

The theme of this year's conference is '**Science Education in Ireland – new Frontiers!**' which is a most relevant theme at this moment in Irish education. The programme of events is outstanding with a great mix of international and Irish presenters. We are truly fortunate to have the opportunity to hear world renowned speakers such as Prof. Eric Mazur, Harvard University, Mark McCaughrean, ESA and Amber Gell, NASA. It is also a privilege to have such high calibre Irish speakers present at our conference.

The workshops on offer provide a huge variety and there is something for everyone. The topics of these workshops are of such importance to all science educators and are sure to be stimulating and engaging.

The Primary Science programme has been a great addition to the ISTA conference in the recent past and many of the speakers will also be of interest to second level teachers.

I would like to take this opportunity to thank the very hard-working organising committee of the Limerick-Clare branch. The committee have put in many hours over the past two years in preparation for the weekend.

I would like to pay particular tribute to Dr. Maria Sheehan, Chairman of the organising committee who has provided great leadership during the preparation and planning of the conference.

Many thanks to all of the sponsors of the conference. Without their generosity and continued support we would not be able to facilitate such a high standard.

As I will be passing on the Chairman's torch to Mr. Seán Fogarty at the ABM, I would like to thank all of the officers and members of council for all of the personal support and help that I have received over the past two years. I have found the experience to be incredibly rewarding and fulfilling. The hard work and dedication of the officers and subject convenors has been inspiring. I wish Sean the very best of luck in his role as Chairman. I would also like to welcome Mr. John Loughlin who has been nominated for the position of Vice Chairman.

Finally I wish all delegates a pleasant weekend and I hope that you thoroughly enjoy all that is on offer at the conference.

Stephanie Leonard
National Chairperson of ISTA

science & technology in action

www.sta.ie

Where Industry & Science Education Meet

Win €100 Cash

Visit the **Science & Technology in Action** stand in the exhibitor's area and fill out a short questionnaire to be entered in a draw for **two cash prizes** of €100. The winners will be announced at the conference dinner on 9th.



www.sta.ie



There are now over 200 lessons available **online** and in hard copy in the **11 editions of Science & Technology in Action (STA)**.

Note: All eleven editions of STA have been delivered free of charge to all second-level schools in Ireland.

To Catch a Comet! (Part 1)

Mark McCaughrean

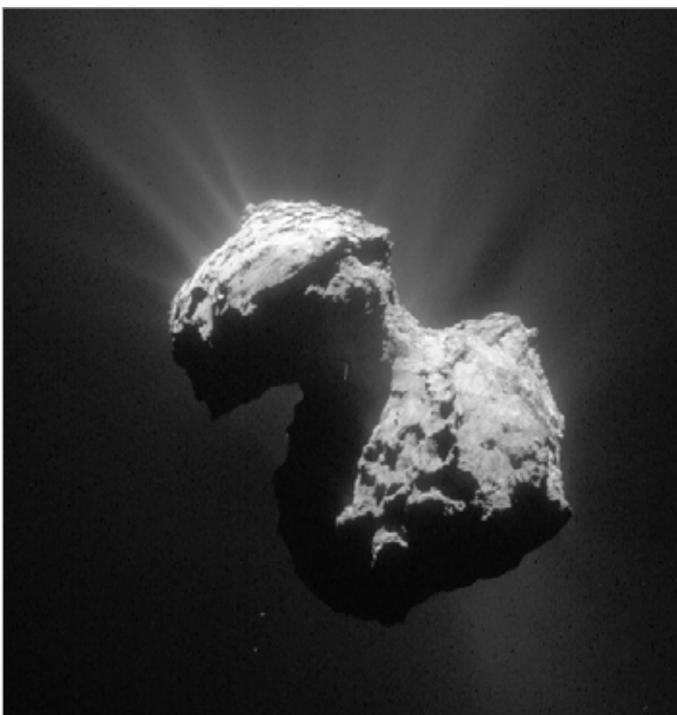
Friday 8th, 19.30
The Strand Hotel

Institution

European Space Agency

Biography

Mark McCaughrean works for the European Space Agency at ESTEC in the Netherlands, where he is the Senior Scientific Advisor in the Directorate of Science and Robotic Exploration. He is also responsible for communicating the scientific results from ESA's astronomy, heliophysics, planetary and fundamental physics missions to the scientific community and the wider public. With a PhD in astrophysics from the University of Edinburgh, he has also worked in the US, Germany, and the UK, latterly as a professor of Astrophysics at the University of Exeter, before joining ESA in 2009. His personal research involves observational studies of the formation of stars and their planetary systems using state-of-the-art ground and space-based telescopes. He is also an Interdisciplinary Scientist on the Science Working Group for the NASA/ESA/CSA James Webb Space Telescope.



To Catch a Comet! (Part 2)

Mark McCaughrean

Saturday 9th, 9.30 am
Millenium Theatre



Abstract

The European Space Agency's Rosetta mission captured the imagination of the world in 2014, as it rendezvoused with Comet 67P/Churyumov-Gerasimenko and deployed a lander, Philae, to its surface. In this talk, I'll give a behind-the-scenes view of the mission, its history, the 10-year journey to reach the comet, and the exciting events that have been taking place there. I'll talk about some of the challenges and risks involved in the mission, and give some idea of what scientists are finding as they unlock this treasure chest of information about the formation of our solar system, the origins of water and perhaps even life on Earth. And to end, a look forward to the final phases of the mission now that Rosetta and the comet are past their closest approach to the Sun.

Sponsor:





Science Foundation Ireland and ESERO Ireland are delighted to partner with Junior Cycle for Teachers to provide a series of one day workshops exploring aspects of the new Junior Cycle Science specification.

The hands-on workshop will guide you through the Nature of Science, Physical World, and Earth and Space to develop student investigation and science communication skills.

Workshops take place throughout Ireland at the following dates and venues:

Cork Education Centre	Saturday 16th April, 2016 9:30am to 4:00pm
Donegal Education Centre	
Galway Education Centre	
Navan Education Centre	
Limerick Education Centre	Saturday 23rd April, 2016 9:30am to 4:00pm
Athlone Education Centre	
Mayo Education Centre	
Dublin West Education Centre	
Kilkenny Education Centre	
Tralee Education Centre	Saturday 7th May, 2016 9:30am to 4:00pm
Carrick-on-Shannon Education Centre	
Clare Education Centre	
Drumcondra Education Centre	
Laois Education Centre	
Monaghan Education Centre	

To book your place, go to www.jct.ie. Early registration is advised. A minimum of 10 participants will be required for a workshop to proceed.

Molecular and cell biology and potential treatments for diseases

Patrick Kiely

Saturday 9th, 10.30 – 11.00 am

Room 3A05

Institution

University of Limerick



Biography

Dr. Pat Kiely is Principal Investigator of the Laboratory of Cellular and Molecular Biology at University of Limerick, Ireland. The research emphasis in his laboratory is on deciphering the localized and transient signalling events which occur in cells as they migrate. He has a specific interest in defining the signalling pathways regulating cell migration in breast cancer and colon cancer.

Abstract

Dr Kiely's research group are using a series of complimentary and synergistic cellular and molecular approaches and novel technologies to investigate how protein complexes are assembled in signalling pathways during this process. Understanding the molecular mechanisms that regulate cell migration is of important intellectual and clinical interest, and he believes this work may reveal fresh approaches to target cancer as well as developmental and neurodegenerative diseases. Research projects on-going in the laboratory range from the most fundamental, where the development of a better understanding of the molecular mechanism(s) regulating cell migration is the goal, to the very applied, where the identification of novel therapeutic targets and the design and synthesis of novel materials and surfaces to study cell behaviour is the desired endpoint.

Sponsor:

REGENERON

Why crystals matter to the real world

Matteo Lusi

Saturday 9th, 10.30 – 11.00 am

Room 3A04

Institution

University of Limerick



Biography

Dr Matteo Lusi is a member of Prof. Zaworotko's group at the University of Limerick where he works on non-stoichiometric multicomponent crystals for pharmaceutical and technological applications.

Abstract

This presentation will address the subject of crystal engineering, the design of crystals with functional properties. Highlighted will be two important applications of crystal engineering: pharmaceutical materials – how materials, crystalline drug substances, enable medicines work to work effectively; porous materials – why porous materials offer new approaches to carbon capture and natural gas storage.

Sponsor: Royal Society of Chemistry



Science on Stage: Looking forward – resources for the classroom

David Keenahan, Eilish McLoughlin and Paul Nugent, IoP

Saturday 9th, 10.30 – 11.00 am

Room 4A01

The brain science of learning and its applications in the classroom

William O'Connor

Saturday 9th, 10.30 – 11.00 am

Room 3A03

Institution

IOP | Institute of Physics
In Ireland

Institute of Physics (IOP)

Biography

Science on Stage is a European initiative designed to encourage teachers from across Europe to share best practice in science teaching. The overall aims of Science on Stage are to:

- Provide a forum for teachers to exchange teaching ideas for the sciences
- Inspire and re-enthuse science teachers
- Provide teachers with access to quality science teaching resources and ideas through workshops, booklets and videos www.scienceonstage.ie
- Inform teachers about wider science research
- Raise the profile of science teaching with education ministers in the countries involved
- Ultimately, the aim of Science on Stage is to enable teachers to deliver science in a more creative and engaging way.

Abstract

Ireland has been involved with Physics on Stage and Science on Stage since its foundation in 2000. This was originally facilitated by the Institute of Physics. It is now sponsored by CASTEL, DCU IoP, PDST and SFI. This presentation will outline the current and planned resources as well as include some 'fun favourites' from previous festivals

Institution

University of Limerick



Biography

Professor Billy O'Connor is Foundation Professor and Head of Teaching and Research in Physiology at the University of Limerick Graduate Entry Medical School

Abstract

This talk will describe the brain-science-of-learning or the emerging field of 'neuroeducation' as it is sometimes called, how it is informing curriculum design and its application in the classroom particularly in relation to those factors which allow the human brain to learn optimally. Don't forget to visit Professor O'Connor's Inside-the-Brain website and to type 'neuroeducation' into the search-this-site-box to access his blogs on this and related topics.

Sponsor: Stryker

The logo for Stryker, featuring the word "stryker" in a bold, lowercase, sans-serif font.



Danielle Romeril
Fashion



Rob Laffan
Robotics



Lena Madden
Pharmaceutical



Brian McInerney
Computer Studies



Jillian Robinson
Tourism Management



Mark Barry
Engineering

It started in **LIT**

Read the full stories @

cao.lit.ie

YOUR CAREER STARTS HERE

LIT welcomes the Irish Science Teachers' Association to our Moylish Campus and looks forward to hosting Science Education in Ireland—New Frontiers

LIMERICK

TIPPERARY



LIT

LIMERICK INSTITUTE
OF TECHNOLOGY

Educating the innovators of the 21st century

Eric Mazur
Saturday 9th, 11.20 – 12.00
Millenium Theatre

Institution

Harvard University

Biography

Eric Mazur is the Balkanski Professor of Physics and Applied Physics at Harvard University and Area Dean of Applied Physics. An internationally recognized scientist and researcher, he leads a vigorous research program in optical physics and supervises one of the largest research groups in the Physics Department at Harvard University. Mazur founded several companies and plays an active role in industry. He is the Vice President of the Optical Society.



Abstract

Can we teach innovation? Innovation requires whole-brain thinking — right-brain thinking for creativity and imagination, and left-brain thinking for planning and execution. Our current approach to education in science and technology focuses on the transfer of information, developing mostly right-brain thinking by stressing copying and reproducing existing ideas rather than generating new ones. I will show how shifting the focus in lectures from delivering information to team work and creative thinking greatly improves the learning that takes place in the classroom and promotes independent thinking.

Sponsor: Dell



Exploration Dome

Saturday 9th, 10.00 – 17.00
Aula Maxima

Abstract

Exploration Dome is a digital mobile planetarium and we offer astronomy shows and full dome films (360 degree) for all ages.

A mobile planetarium gives children a chance to interact with the planets and stars in our universe. Our full dome films handle subjects on Earth Science, Mathematics and Astronomy. Shows last approximately 45 minutes and consist of an introduction to astronomy and a full dome film of your choice.

Each show can seat up to 40 secondary or 45 primary school students. We can do a maximum of five shows within a school day. Shows can be adapted for every class or group. The shows can be an addition to subjects you teach in your school. There is no need to leave your school, because “we bring the wonders of the universe to your doorstep”.



Molecular biology experiments for classrooms workshop

Robert Schwarmborn

Saturday 9th
12.10–13.00 pm and 15.20–16.10 pm
Room 8A701

Institution

University College Dublin



Abstract

Abstract: The Amgen Biotech Experience programme is offering training in molecular biology experiments for secondary school teachers. Teachers who take part in the training have access to professional grade scientific equipment that they can borrow to teach their students in school. The programme is tailored to the Irish syllabus. It is FREE as it is funded by the Amgen foundation and has been endorsed by ISTA and PDST. Currently operating in the Dublin region only, we are hoping to expand the programme to several sites in Ireland over the coming years. Last year 19 teachers and more than 900 students benefited of the ABE programme. See www.amgenbiotechexperience.com for general information about the programme, for Ireland-specific information, please email ABE-Ireland@ucd.ie

Inquiry in the Physics Lab.

Leah Wallace, LIT

Saturday 9th
12.10–13.00 pm and 15.20–16.10 pm
Room 8A507

Institution

Limerick Institute of Technology



Abstract

Interactive workshop that investigates, through inquiry based experiments, the principles of physics governing:

- Sweating (evaporative cooling)
- When to add milk to your coffee (Newton's law of cooling)
- High altitude cooking (gas laws)

Chemistry and the Environment

David Sutton, LIT

Saturday 9th
12.10–13.00 pm and 15.20–16.10 pm
Room 8A706

Institution

Limerick Institute of Technology



Abstract

This workshop creates samples of "acid rain" in a controlled environment via a double displacement reaction and a subsequent reaction with water vapour in the 'atmosphere' producing acid rain. The workshop informs the learner of double displacement reactions. Furthermore, the workshop identifies the source and formation of primary pollutants and subsequent formation of secondary pollutants within the environment. The dispersal and re-concentration of the pollutant as acid rain and subsequent collection for analysis is realised. Time related pH sensor data is employed to quantify the change in pH of a water body in the simulate environment. The subsequent data can be graphed and the resultant acid rain collected and tested to determine what effects acid rain has on common substances.

Introduction to online RSC resources

RSC

Saturday 9th
12.10–13.00 pm and 15.20–16.10 pm
Room 1A11

Institution

Royal Society of Chemistry



Abstract

Currently there are in the region of 4000 resources in the RSC's Learn Chemistry website. Find out how to search through them efficiently, learn about the latest Learn Chemistry themes, and discover which resources teachers find most useful and why.

Bringing the world's biggest robotic telescope into your classroom

Liverpool Space Observatory

**Saturday 9th
12.10–13.00 pm and 15.20–16.10 pm
Room 1A12**

Institution

Liverpool John Moores University

Abstract

Astronomy is an amazing hook to get students interested in all STEM (Science, Technology, Engineering and Maths) subjects. It is also a subject which suffers from a lower gender bias than other physical sciences, seen both in students subject choices, and in the enthusiasm displayed lower down the school system by all pupils.

The **National Schools' Observatory** (NSO) aims to ignite and encourage this innate fascination with space, by providing all schools and students across the UK and Ireland with free access to the world's largest robotic telescope, the Liverpool Telescope. Through the NSO students can access this professional telescope, with minimal teacher input, and carry out activities and projects, plus request their own observations using our easy, user-friendly. Should teachers want to get more involved there are also a range of free resources and activities, alongside teacher support and CPD opportunities. This session will present teachers to this free STEM resource, and guide them through taking their own observations with the support of the NSO team with 2 workshops running at 12.10 to 13.00 and then again from 15.20 to 16.10, and will be manning a stall throughout the day to be on hand for any questions.



Evidence in school learning

Stuart Naylor

**Saturday 9th
12.10–13.00 pm only
Room 3A05**

Institution

Millgate House Education

Abstract

In everyday life science can help us to lead a sensible life. When we are scientifically literate we understand the importance of evidence, and we hope to base our judgements, decisions and actions on evidence. How does school science deal with evidence? In this session I will try to address that question and explore the implications of adopting a scientific perspective in our teaching. It will include how we look for evidence, how and why confirmation bias can occur, what we do with evidence and what evidence tells us.



Energy in Action

Eilish McLoughlin & Damien Letmon
12.10–13.00 pm only
Room 8A714

Institution

Dublin City University

Abstract

Energy Horizons is an exciting new programme to help young people to develop their knowledge about energy, energy efficiency and conservation. The programme explores energy and science in a real world way, exploring how and why as a society, we need to develop new ways of looking at our energy resources. This programme has been developed by CASTeL at Dublin City University in collaboration with the Sustainable Energy Authority of Ireland.



Teaching enquiry through Mysteries Incorporated (TEMI)

Peter Childs

Saturday 9th

12.10–13.00 pm and 15.20–16.10 pm

Room 8A503

Institution

University of Limerick

Abstract

Teaching Enquiry with Mysteries Incorporated (TEMI, www.teachingmysteries.eu) is an EU-funded project in the area of inquiry-based science education (IBSE), which finishes in 2016. The University of Limerick is one of 12 international partners in the project. The idea behind the project is to promote enquiry in science teaching by engaging students at the start of a lesson with a mystery or discrepant event. This mystery is something that raises questions, arouses curiosity and stimulates a spirit of enquiry. The project is based around CPD workshops for teachers and in this short taster workshop science teachers will be exposed to the idea in the context of the 5E model of enquiry, and shown how mysteries can be used as one way to engage students at the start of the lesson in order to initiate enquiry. Teachers will be given the opportunity to experience some of these mysteries from a student's perspective and also given suggestions for better questioning in order to encourage enquiry.



Laboratory safety

Sinead McMickan and Michelle McDermott

Saturday 9th

12.10–13.00 pm and 15.20–16.10 pm

Room 3A03

Institution

Health and Safety Authority

Abstract

This session will include:

- Informative discussion on chemical awareness and management to ensure safety in the science laboratory.
- Changes in the rules for hazard labelling of chemicals and accompanying safety data sheets
- Practical advice on managing chemicals in the laboratory, safe decanting, use and storage.



Gross germs and bizarre bacteria: Make & Take anti-bac hand gel!

Sarah Hayes

Saturday 9th

12.10–13.00 pm and 15.20–16.10 pm

Room 8A702

Assessing inquiry skills in Science

Eilish McLoughlin

Saturday 9th

12.10–13.00 pm only

Room 3A05

Institution

Solid State Pharmaceutical Cluster (SSPC)



Abstract

Bad bacteria and gross germs are everywhere, 1,000,000,000,000 can live on one gram of poop! It is getting harder and harder to prevent these bugs! Did you know that something as simple as washing your hands or using a disinfectant anti-bacterial hand gel can keep you safe? Come and join us to learn how to make and take home your own anti-bacterial hand gel and learn about all types of bacteria; the good, the bad and the REALLY ugly!

Illustrative demonstrations or activities:

- Exploring bacteria different types of bacteria – the good, the bad and the ugly! PowerPoint presentation and bacteria exhibit - *E.Coli*, *Candida*, *Staphauarus*
- Make and take: Make your own anti-bacterial hand gel to take away. This hand gel is what is used to prevent MRSA in hospitals!
- Test yourself: Participants will be assigned a number (for them to keep, and anonymity will be kept) and invited to swab their hands or phones to see what bugs are living there! These agar plates will be numbered and photographed as bacterial growth progresses. Participants will be able to check up on their own samples on the website.

Institution

Dublin City University

Abstract

This workshop will share the experiences of second level science teachers of assessing the inquiry skills and competencies of their students. This work has been carried out as part of the SAILS project which has developed strategies and frameworks for the assessment of IBSE skills and competences and provided professional development programmes for teachers to prepare them not only to be able to take up IBSE practice, but also to be confident and competent in the assessment of their students' learning. This pan-European project has been led by CASTeL at Dublin City University.



Something you will be able to do in your class on Monday!

Saturday 28th, 13.50 – 14.30 pm
Millenium Theatre

Outline

This session is an adapted *Pecha Kucha* type session where speakers will have **three minutes and only six slides** to cover an idea, concept or teaching approach that has worked well for them in the **Transition Year Science** class. The presenters included in this session include:

Speakers

Richie Moynihan - Physics teacher and member of the *Irish Science on Stage* team

Declan Cathcart - Biology teacher and member of the SAILS team

Brigid Corrigan - Chemistry and Biology teacher, JCT associate and member of the *Irish Science on Stage* team

Pat Dundon - Biology and Physics Teacher, PDST science associate and member of the *Irish Science on Stage* team

Paul Nugent - Physics teacher, Institute of Physics (IoP) network coordinator and member of the *Irish Science on Stage* team

Paudi Scanlon - Physics and Maths teacher with an interest in technology and coding.

Yvonne Higgins - Biology and Chemistry teacher, BT Science and Technology Exhibition Educator of Excellence 2016

Sponsor: Cook Medical



Biomolecules from the sea

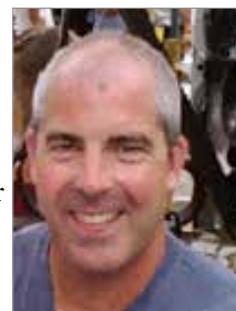
Danny Walsh
Saturday 9th, 14.40 – 15.10 pm
Room 3A05

Institution

Limerick Institute of Technology

Biography

Dr. Walsh is a Biosciences lecturer in the Dept. Applied Science, LIT since 2004. He holds a BSc in Biochemistry and a PhD in Protein Chemistry (Fungal derived Exo-enzymes) from the National University of Ireland, Galway. He has 19 years of applied research in food and bioactivities. He was a Dept. of Agriculture Post-Doctoral Fellow in the Dairy Products Research Centre, Teagasc, Moorepark, Fermoy, Co. Cork. His research, in collaboration with industry, focused on identifying manufacturing variables during acid casein/sodium caseinate production. He was a Department of Agriculture Post-Doctoral Fellow in the Dept. of Life Sciences, University of Limerick. During this time he investigated mechanisms to extract, enrich and characterise proteins from plant sources for use as novel functional industrial proteins. Dr. Walsh teaches on a permanent basis on a range of degree based programmes spanning 2nd - 4th year in LIT. His subjects encompass bioscience and applied biotechnology specialties. Scientific knowledge acquired in BAMMBO is passed back into his teaching programme modules so as to educate and promote the Knowledge Based Bio-Economy at 3rd level.



Abstract

Europe has a broad marine diversity with a well-developed biotechnology research sector. Taken together, Europe is well positioned for marine biotechnology to contribute to its growing bio-economy. The presentation outlines a European Commission funded research project entitled 'Sustainable production of Biologically Active Molecules of Marine Based Origin' (BAMMBO) whose aim was to promote marine biotechnology in Europe through the process of bio-prospecting and through the development of methods for small to large scale culture of marine organisms. The research focussed on the culture of invertebrate marine organisms such as algae, sponges, fungi, seaweed, sponges, bacteria and yeast with the ultimate aim of identifying bioactive molecules with industrial, cosmetic and health applications. An overview of the objectives, people, technology and findings of the project will be presented.



Irish
Science
Teachers'
Association

Εοιοιόι
να ηέιρεαμν



ISTA 54th ANNUAL CONFERENCE

LIMERICK INSTITUTE OF TECHNOLOGY

Science Education in Ireland

Friday 8th April 2016

Venue: – The Strand Hotel, Limerick

- 17.00 - 19.00 **Registration**
- 18.30 – 19.00 **President's reception:** Tea / coffee and biscuits.
- 19.00 – 19.30 **Welcome and official opening**
- 19.30 – 20.30 To catch a comet, Part 1
Mark McCaughrean, Senior Science Advisor in the Directorate of Science & Robotic Exploration at the European Space Agency
- 20.30 – 22.30 Buffet Supper and Music

Saturday 9th April 2016

Venue: – Limerick Institute of Technology

Time	Activity	Room
8.45 – 9.30	Registration	
9.30 – 10.20	To catch a comet, Part 2 Mark McCaughrean	Millennium Theatre
10.30 – 11.00	<i>Concurrent Lectures, Session 1</i>	
	Molecular and cell biology and potential treatments for diseases Patrick Kiely	3A05
	Why crystals matter to the real world Matteo Lusi	3A04
	Science on Stage David Keenahan, Eilish McLoughlin and Paul Nugent, IoP	4A01
	The brain science of learning and its applications in the classroom William O'Connor	3A03
11.00 – 11.20	<i>Tea/Coffee</i>	
11.20 – 12.00	Educating the innovators of the 21st century Eric Mazur, Harvard University	Millennium Theatre
12.10 – 13.00	<i>Workshop Sessions 1</i>	
	Molecular biology experiments for classrooms workshop Robert Schwarmborn, UCD	8A701
	Chemistry and the Environment David Sutton, LIT	8A706
	Introduction to online RSC resources RSC	1A11
	Inquiry in the Physics Lab. Leah Wallace, LIT	8A507
	Robotic telescope into your classroom Liverpool Space Observatory	1A12
	Evidence in school learning Stuart Naylor	3A05
	Energy in Action Castel	8A714
	Teaching enquiry through Mysteries Incorporated TEMI	8A503
	Gross germs and bizarre bacteria SSPC	8A702
	Laboratory safety Sinead McMickan and Michelle McDermott, HSA	3A03

CONFERENCE 8th – 10th APRIL 2016
SCIENCE & THE STRAND HOTEL
Limerick – New Frontiers!



*Irish
Science
Teachers'
Association*

*eolóirí
na héireann*



REGENERON



		Room
13.00 – 13.50	<i>Lunch</i>	
13.50 – 14.30	Pecha Kucha session on Transition Year Science (Something you will be able to do in your class on Monday!)	Millennium Theatre
14.40 – 15.10	<i>Concurrent Lectures, Session 2</i>	
	BioMolecules from the sea Danny Walsh	3A05
	Nanotechnology David Katz	3A04
	Wrapping light around a hair Eric Mazur	4A01
	Nature of Science Sibel Erduran	3A03
15.20 – 16.10	<i>Workshop Sessions 2</i>	
	Molecular biology experiments for classrooms workshop Robert Schwarmborn, UCD	8A701
	Chemistry and the Environment David Sutton, LIT	8A706
	Introduction to online RSC resources RSC	1A11
	Inquiry in the Physics Lab. Leah Wallace, LIT	8A507
	Bringing the world's biggest robotic telescope into your classroom Liverpool Space Observatory	1A12
	Assessing inquiry skills in science Castel	3A05
	Teaching enquiry through Mysteries Incorporated TEMI	8A503
	Gross germs and bizarre bacteria SSPC	8A702
	Laboratory safety Sinead McMickan and Michelle McDermott, HSA	3A03
16.10 – 17.00	Deep Space Exploration - Inspiring Scientists and Engineers of the Future Amber Gell, NASA	Millennium Theatre
17.00 – 17.10	Conference raffle	Millennium Theatre
17.10 – 18.00	ABM	Millennium Theatre
18.00 – 18.30	Mass (in LIT)	Millennium Theatre
19.30 – 20.00	President's reception (Strand Hotel)	
20.00 – 22.00	Gala Dinner (Strand Hotel)	

Sunday 10th April 2016

Venue: – The Strand Hotel, Limerick

10.00 – 10.30	Update on Senior Science Specifications Anna Walshe, NCCA	Strand Hotel
10.30 – 11.30	Chemistry magic show David Katz	Strand Hotel
11.30 – 11.45	<i>Tea/Coffee</i>	
11.45 – 12.45	Animal Magic Wildlife Rescue, School Road show	Strand Hotel



Science Day for Primary Teachers in Limerick Institute

Be Inspired by Space — How to Catch a Comet

Professor Mark McCaughrean, European Space Agency

**Joint session for Primary and Second Level Teachers*

Professor Mark McCaughrean works for the European Space Agency. ESA have worked for years on the Rosetta mission, the first ever spacecraft to rendezvous with a comet and to send a Lander down to land on the comet. Not a rock but made out of ice. He will talk about that landing which took place in November 2014, but also the inspiration this extraordinary project can bring to a whole generation of children and adults to get involved in engineering, technology and science.

A wonderful opportunity to learn more about space, comets and our place in the universe—a topic all children are fascinated by. Come and be inspired by space.

Making Sense of Science Inquiry

Stuart Naylor, Millgate House Education

We carry out fair tests to answer questions in science—it is a Working Scientifically Skill we need to help our students develop. But is a fair test the only way to carry out science investigations? What other ways are there to answer scientific questions and develop children's science ideas? This workshop explores the other types of science inquiry: what they are, how they can be developed from different starting points, and how you can build different types of science inquiry into your teaching. It will help you to make science inquiry more manageable in your classroom, as well as helping your children to learn more about science.

Stuart Naylor, co-creator with the late Brenda Keogh of Concept Cartoons in Science, has produced through his UK company Millgate House Education a host of wonderful science teaching resources and books (*The Snowman's Coat*, *It's Not Fair or Is It*, *Look Think, Talk*) and runs CPD courses to help teachers improve their Primary Science Teaching.

Inquiry Based Science Education and the Energy & Forces Strand

Dr Orla Kell, Church of Ireland College of Education, Rathmines, Dublin.

**Supported by SEAI*

This session will explore Inquiry Based Science Education (IBSE), with reference to the SEAI 'Exploring Our Energy' programme. Drawing from the Energy and Forces and Environmental Awareness and Care strands, connections will be made with a range of curricular objectives and working scientifically through hands-on activities. It is supported by the Sustainable Energy Authority of Ireland (SEAI).

Dr Orla Kelly is a lecturer in Social, Environmental and Scientific Education at the Church of Ireland College of Education in Rathmines in Dublin with responsibility for science, history and geography education on the B.Ed (Primary). She is a strong advocate for inquiry and problem-based approaches to teaching and learning in science. She is co-author, with Roger Cutting, of the book 'Creative Teaching in Primary Science'.

Materials: Air & Water—Hands on science activities for the classroom

Michael Browne, Clare & Limerick Education Centres, Mary Immaculate College

This session will explore air and water and how they interact in so many aspects of everyday life. They will also investigate floating & sinking and surface tension. The session will be hands-on and will model methodologies suitable for teaching science in primary schools at all levels. Each participant will receive a booklet of investigations relating to the topic.

Michael Browne (with Maria Sheehan) runs annual science courses for Primary Teachers with the Limerick & Clare Education Centres and has experience in supporting schools and teachers in developing the teaching of science in their schools. Michael is an experienced primary school teacher and author of the *Window on the World Science* series of books for Irish Primary Schools. He also lectures in the pedagogy of science in Mary Immaculate College.

Teaching Science to Infants

Maria Minogue & Maeve Liston, Mary Immaculate College of Education

Are you an Infants teacher but feel that most science resources that you come across are for older children? Feeling a bit left out? This session will explore hands on activities suitable for teaching science in Junior and Senior Infant Classes

Maeve Liston is lecturer in SESE at Mary Immaculate College of Education as well as being an Institute of Physics (IOP) Science on Stage Demonstrator. Maria Minogue is a practicing Primary Teacher carrying out postgraduate research into strategies for science teaching in the infant classes.

A practical activity to demonstrate the importance of Earth Observation for the primary classroom

This session will showcase a practical, hands-on, inquiry based activity, investigating volcano eruptions, which demonstrates the importance of earth observation using satellites from space for many applications.

Fionnuala Murphy, Carla Hayes & Niamh Riordan are practicing primary teachers who attended a three day teacher CPD session at the European Space Research and Technology Centre (ESTEC) in Noordwijk, the Netherlands, in July 2015. This session is supported by Science Foundation Ireland and ESERO Ireland—the European Space Education Resource Office in Ireland.

Sharing Good Practice—Short Ideas for Science Teaching

In this session, practitioners will share practice and ideas for primary science teaching using concise focused and time bound presentations. In the style of Pecha Kucha presentation, each presenter will deliver their key message in no more than 3 minutes. This will be followed by ample time for group discussion and questions and answers from the floor.



8.45 – 9.30	Registration & Visiting Exhibitions Group 1/Group 2 will be assigned at Registration		
9.30 – 10.20	<i>Be Inspired by Space — How to Catch a Comet</i> Professor Mark McCaughrean European Space Agency		
	Group 1		Group 2
10.30 – 11.30	<i>Making Sense of Science Inquiry</i> Stuart Naylor Millgate House Education	<i>Materials: Air & Water: Hands-on science activities for the classroom</i> Michael Browne Clare & Limerick Education Centres	
11.30 – 11.45	Coffee		
11.45-12.45	<i>Materials: Air & Water: Hands-on science activities for the classroom</i> Michael Browne Clare & Limerick Education Centres	<i>Inquiry Based Science Education & the Energy & Forces Strand</i> Dr Orla Kelly Church or Ireland College of Education	
12.45 – 13.30	Lunch		
13.30 – 14.25	<i>Teaching Science to Infants</i> Maria Minogue & Maeve Liston, Mary Immaculate College	<i>Sharing Good Practice—Short Ideas for Science Teaching</i>	<i>A practical activity to demonstrate the importance of Earth Observation for the primary classroom</i> (SFI/ESERO –Ireland)
14.25 – 14.35	<i>Short break to allow groups to swap between rooms</i>		
14.35 – 15.30	<i>Sharing Good Practice—Short Ideas for Science Teaching</i>	<i>Teaching Science to Infants</i> Maria Minogue & Maeve Liston, Mary Immaculate College	<i>A practical activity to demonstrate the importance of Earth Observation for the primary classroom</i> (SFI/ESERO –Ireland)
15.30 – 15.45	Coffee		
15.45 – 16.45	<i>Inquiry Based Science Education & the Energy & Forces Strand</i> Dr Orla Kelly Church or Ireland College of Education	<i>Making Sense of Science Inquiry</i> Stuart Naylor Millgate House Education	
16.45 – 17.00	<i>Discussion, Feedback and Planning</i>		



Molecules make a difference



SERVICES PLATFORM

- 34 Alexion Pharmaceuticals
- 35 Alkermes Pharma Ireland
- 36 Allergan Pharmaceuticals Ireland
- 37 BMS
- 38 Camida
- 39 Charles River Laboratories Preclinical Service
- 40 Eli Lilly SA
- 41 FMC International
- 42 Helsinn Birex Pharmaceuticals
- 43 Horizon Pharma
- 44 Hovione
- 45 Mallinckrodt Pharmaceuticals
- 46 Pfizer Ireland Pharmaceuticals
- 47 PPDevelopment Ireland
- 48 Recordati Ireland



BIOTECH PLATFORM

- 1 Alexion Pharmaceuticals
- 2 Allergan Pharmaceuticals Ireland
- 3 Amgen Technology (Ireland)
- 4 BioMarin International
- 5 Eli Lilly SA
- 6 Ethicon
- 7 Genzyme Ireland
- 8 Janssen Biologics Ireland
- 9 Jazz Pharma
- 10 Mallinckrodt Pharmaceuticals
- 11 MSD Brinny
- 12 MSD Carlow
- 13 Mylan
- 14 Pfizer Grange Castle
- 15 Regeneron Pharmaceuticals



PHARMA PLATFORM

- 16 Abbott Pharmaceuticals
- 17 AbbVie Fournier Laboratories
- 18 Allergan Pharmaceuticals Ireland
- 19 Astellas Ireland
- 20 Forest Laboratories Ireland
- 21 GEHealthcare Bio Sciences
- 22 Gilead Sciences
- 23 GSK
- 24 Helsinn Birex Pharmaceuticals
- 25 LEO Pharma
- 26 Mylan
- 27 Teva Pharmaceutical
- 28 MSD
- 29 Pfizer Ireland
- 30 Rottapharm
- 31 Servier Ireland Industries
- 32 Stiefel a GSK Company
- 33 Takeda Ireland



API PLATFORM

- 49 Astellas Ireland
- 50 BMS
- 51 Cara Partners
- 52 Clariochem Ireland
- 53 Eli Lilly SA
- 54 GlaxoSmithKline
- 55 Hovione
- 56 Ipsen Manufacturing Ireland
- 57 Janssen Biologics Ireland
- 58 Mallinckrodt Pharmaceutical
- 59 MSD Ireland (Ballydine)
- 60 Novartis Ringaskiddy
- 61 Pfizer Cork Limited
- 62 Recordati Ireland
- 63 Roche Ireland
- 64 Sigma Aldrich Ireland
- 65 Takeda Ireland
- 66 UCB Manufacturing Ireland



CHEMICAL PLATFORM

- 67 Arran Chemical Company
- 68 BASF Ireland
- 69 Henkel Ireland Operations and Research
- 70 Heraeus Metal Processing
- 71 Sigma Aldrich Ireland

Nanotechnology experiments for general chemistry laboratory classes

David Katz

Saturday 9th, 14.40 – 15.10 pm

Room 3A04

Institution

USA

Biography



Professor Katz has been a leader in performing chemistry outreach and enhancing the public understanding of chemistry for over 30 years.

Professor Katz earned his B.Sc.

in Chemistry from Drexel University and his M.Sc. from Villanova University. Katz is an active member of the ACS and has worked to improve chemical safety and education through numerous national and local activities. Katz's first published work appeared in a 1968 copy of *Microchemical Journal* titled, "determination of halides with ion specific electrodes" and since then his work has been featured in countless publications, including the *Journal of Chemical Education*. Katz has also contributed work to many textbooks including his own textbook in 2005 titled "*The General Chemistry Laboratory Survival Manual*." Katz now manages his own website, www.chymist.com, where he profiles some of his experiments and provides tips and study guides for college students studying chemistry.

Abstract

This author has utilized low-cost nanotechnology experiments, and related demonstrations, into the non-major and general chemistry laboratory that were modified from procedures and kits developed at the Materials Research Science and Engineering Centre (MRSEC) at the University of Wisconsin-Madison. These experiments include cholesteryl liquid crystals, aqueous Ferrofluid, Nitinol metal, LEDs, and a microcrystalline titanium dioxide solar cell. The hands-on experiments along with discussions of applications of these experiments give students, both majors and non-science majors, (and even children in science museums) an understanding of nanotechnology and how it affects them in their daily lives.

Sponsor: Biopharmachem Ireland

An tSraith Shóisearach do Mhúinteoirí

Junior **CYCLE**
for teachers

info@jct.ie

www.jct.ie

@JCforTeachers #JCTScience

The Junior Cycle Science Specification will be introduced in schools in September 2016. The Specification is based on 46 learning outcomes. The Nature of Science is central. It encompasses understanding about how science works, the inquiry continuum, communicating in science and science and society. The Nature of Science and Key Skills will suffuse the 4 contextual strands of Earth and Space, Chemical World, Physical World and Biological World. Aspects of the Nature of Science will be incorporated in every lesson.

Science will become a more holistic enterprise in which learners engage in the variety of science practices. Learners will develop as more informed citizens, equipped to evaluate arguments related to critical technical, ethical and environmental issues. Subject knowledge will remain a cornerstone but bolstered by the understanding, skills and values developed through inclusive and collaborative learning activities designed by teachers.

To support teachers in this process, the JCT Science team will provide one full day of CPD for teachers of science before the specification begins to be used with first year in September 2016-2017. In subsequent years, JCT Science will develop a variety of CPD based on the expressed needs of teachers. From March 2016, teachers may also participate in elective supports under development with our partners in Science Foundation Ireland (SFI) and the Science Gallery.

The logo for EMC², featuring the letters 'EMC' in a large, white, serif font, with a superscript '2' to the right. A registered trademark symbol (®) is located at the bottom right of the 'C'. The background is a dark blue, perspective view of a grid of glowing blue squares that recede into the distance, creating a sense of depth and technology.

Redefining how you do business

EMC Ireland Centre of Excellence

www.emc.com

Wrapping light around a hair

Eric Mazur

Saturday 9th, 14.40 – 15.10 pm

Room 4A01

Institution

Harvard University

Biography

Eric Mazur is the Balkanski Professor of Physics and Applied Physics at Harvard University and Area Dean of Applied Physics. An internationally recognized scientist and researcher, he leads a vigorous research program in optical physics and supervises one of the largest research groups in the Physics Department at Harvard University. Mazur founded several companies and plays an active role in industry. He is the Vice President of the Optical Society.



Abstract

Can light be guided by a fibre whose diameter is much smaller than the wavelength of the light? Can we mould the flow of light on the micrometre scale so it wraps, say, around a hair? Until recently the answer to these questions was “no”. We developed a technique for drawing long, free-standing silica wires with diameters down to 50 nm that have a surface smoothness at the atomic level and a high uniformity of diameter. Light can be launched into these silica nanowires by optical evanescent coupling and the wires allow low-loss single-mode operation. They can be bent sharply, making it possible to control the propagation of light around micrometre-sized corners. The nanowires have applications in micro photonic devices for optical processing and environmental sensing.

Sponsor: Dell



Nature of Science

Sibel Erduran

Saturday 9th, 14.40 – 15.10 pm

Room 3A03

Institution

EpiStem - University of Limerick

Biography

Professor Sibel Erduran is Chair of EpiStem at the University of Limerick. She is an Editor for International Journal of Science Education and Section Editor for Science Education. She serves as a Director on the IHPST Council, acted as the NARST International Coordinator and was a member of the NSTA Research Committee. She has authored close to 150 publications and made over 130 international/national presentations including plenary speeches at conferences in Taiwan, South Africa, Mexico, Korea, Argentina and Lebanon. Her research interests focus on the applications in science education of interdisciplinary perspectives on science, particularly the epistemic practices of science. She serves on the Editorial Boards of Springer Series “Science: Philosophy History and Education” and Review of Educational Research Journal among others.



Abstract

The talk will focus on the nature of science (NOS) and its implications for science teaching and learning at secondary level. NOS is a relatively new component of the Irish Junior Cycle Science Syllabus although as a topic, it has been established as an area of research in science education for several decades. Various versions of NOS have been promoted in teaching and learning of science. For example, in England and Wales, historically the “Ideas and Evidence” and “How Science Works” agendas addressed aspects of NOS. Yet the precise definition of NOS is a contested territory. For example, the relationship between NOS and scientific inquiry is not agreed upon. The presentation will outline some of the recent debates about NOS in science teaching and learning, and argue that the contemporary accounts are limited and fragmented. The talk will provide recommendations for bringing authenticity to NOS in school science by taking a holistic approach to how science is presented to students so that students gain understanding of science in its broadest sense, including its aims, values, methods, knowledge, practices and social contexts.

ISTA Annual Business Meeting

9th April 2016, 16.10 – 17.00 pm
Room ???

Notice

Notice is hereby given that the Annual Business Meeting of the ISTA will take place on Saturday 9th April at 4.10 pm in the Millennium Theatre, LIT.

Agenda

1. Minutes of 2015 ABM
2. Matters arising from the minutes
3. Votes of thanks for use of facilities
4. Hon. Chairperson's report
5. Hon. Secretary's report
6. Hon. Treasurer's report
7. Syllabus subcommittee reports
8. Matters arising from subcommittee reports
9. Vote of thanks to outgoing officers
10. Elections
11. AOB

Nominations

Council has received nominations for the following officer positions:

- President – Dr. Conor O'Brien
- Chairman – Mr. Seán Fogarty (Wexford Branch)
- Vice Chairman – Mr. John Loughlin (Galway Branch)
- Honorary Secretary – Dr. Maria Sheehan (Limerick – Clare Branch)
- Honorary Treasurer – Mr. John Lucey (Cork Branch)

List of ISTA Annual Conferences		
1	Dublin (UCD, Merrion Street) 17 Apr	1962
2	Dublin (UCD, Merrion Street) 1 Jan	1963
3	Dublin (UCD, Merrion Street) July	1964
4	Dublin (UCD, Merrion St. 27-29 July	1965
5	Dublin (UCD, Belfield) 18-29 July	1966
6	Dublin (UCD, Belfield) 18-27 July	1967
7	Cork (UCC) 24-26 July	1968
8	Dublin (DIT)	1969
9	Dublin (Trinity College)	1970
10	Athlone (RTC)	1971
11	Dublin (St Paul's College, Raheny)	1972
12	Cork (St Aloysius)	1973
13	Dublin (Mount Temple)	1974
14	Wexford (St Peter's College)	1975
15	Limerick (Crescent College)	1976
16	Cork (St Aloysius)	1977
17	Dundalk (RTC)	1978
18	Dublin (Manor House School, Raheny)	1979
19	Kilkenny (St Kieran's College)	1980
20	Galway (UCG)	1981
21	Cork (UCC)	1982
22	Wexford (St Peter's College)	1983
23	Sligo (RTC)	1984
24	Waterford	1985
25	Dundalk (RTC)	1986
26	Limerick (Thomond)	1987
27	Wexford (St Peter's College)	1988
28	Cork (UCC)	1989
29	Galway (St Enda's)	1990
30	Dublin (UCD)	1991
31	Kilkenny (Kilkenny College)	1992
32	Tralee (Tralee IT)	1993
33	Dundalk (IT)	1994
34	Kildare (Newbridge College)	1995
35	Donegal (Abbey Vocational)	1996
36	Cork (UCC)	1997
37	Limerick (Limerick IT)	1998
38	Galway (UCG)	1999
39	Dublin (UCD)	2000
	Waterford (cancelled.. 'foot & mouth')	2001
40	Waterford (Waterford IT)	2002
41	Tralee (Tralee IT)	2003
42	Dundalk (Dundalk IT)	2004
43	Carlow (Carlow IT)	2005
44	Athlone (Athlone IT)	2006
45	Cork (UCC)	2007
46	Donegal (Letterkenny IT)	2008
47	Limerick (UL)	2009
48	Sligo (Sligo IT)	2010
49	Thurles (Tipperary Institute)	2011
50	Dublin (Trinity College)	2012
51	Wexford (Gorey Community School)	2013
52	Galway (NUI Galway)	2014
53	University College Cork	2015
54	Limerick Institute of Technology	2016
55	NUI Maaynooth	2017

The History of the Science Educator of the Year Awards

Dr Oliver Ryan



In 1983 four students, who were completing an M.Ed. in Science Education, and myself were invited to visit the BP headquarters in London to get some information on the Oil Industry. We were working on a publication called “*The Science of Oil*” which was subsequently published by BP.

I was fortunate to meet the Director of the **BP Education Section** and we discussed a number of topics. One of the topics was the possibility of sponsoring an award for a Science Teacher who made a significant contribution to Science Teaching at a national level. They very quickly agreed and I was asked to draw up criteria for the Award. They commissioned a Trophy and agreed to give a cheque to the winner to cover travel and expenses to attend the British Science Teachers’ Conference. They also contacted a number of National Science Teaching Associations and offered to sponsor awards for them.

ISTA branches throughout the country were asked to nominate suitable candidates and a winner was selected from among those nominated. The first winner was **Randal Henly** who was presented with the **B.P Science Educator of the Year Award** in Sligo in 1984. This continued until 2006 at which time BP had left Ireland and it became more difficult to get them to continue with the sponsorship.

I was very fortunate to meet Vincent English of **Vernier** and he agreed to provide a trophy and prize for the following two years.

At the 2008 AGM PharmaChemical Ireland (who were by then sponsoring awards for H.Dip Science students) agreed to sponsor the **PharmaChemical Ireland Science Educator of the Year** award. They have increased the sponsorship and each year provide a trophy and substantial prize to the winner. The adjudication panel consists of all former winners of the award and I have the privilege of acting as chairman of the group.



Looking down the list of former winners one can see the names of people that any country would be proud to have in their educational systems. I can only hope that the award will continue for many years and will help to stimulate many young Science Teachers.

Dr Oliver Ryan

Formerly of NUI Galway (Education Dept.)

Science Educator of the Year award winners

1984	Randal Henly	1995	Sr. Mercedes Desmond	2006	Paddy Daly
1985	Dr. Peter Childs	1996	Margaret O’Brien	2007	Pat Hanratty
1986	Fr. Donal Collins	1997	Tom Bolger	2008	Yvonne Higgins
1987	Jim Hurley	1998	Ann Wilkinson	2009	Mary Lee
1988	Br. Maurice Murphy	1999	Siobhan Greer	2010	Marge Anderson
1989	Helen Renehan	2000	Pádraig Ó Léime	2011	John Lucey
1990	Peter Burke	2001	George Porter	2012	Mary Mullaghy
1991	Patrick Hogan	2002	John Daly	2013	Siobhan Sweeney
1992	Declan Kennedy	2003	Seamus McManus	2014	Rory Geoghegan
1993	Marion Palmer	2004	Noel Brett	2015	Sheila Porter
1994	Oliver Harrington	2005	Dr. Oliver Ryan	2016

Deep Space Exploration: Inspiring the scientists and engineers for the future

Amber Gell

Saturday 9th, 16.10 – 17.00 pm

Millenium Theatre

Update on the developments in Leaving Certificate chemistry, biology and physics specifications

Anna Walshe

Sunday 10th, 10.00–10.30 am

The Strand Hotel

Institution

NASA & Lockheed Martin



Biography

Amber S. Gell was born in Milwaukee, Wisconsin, and currently works for Lockheed Martin. Ms. Gell's broad range of experience includes her work as a Spacecraft Systems Engineer, designing and developing numerous subsystems for the Orion Spacecraft and other Advanced Programs. She has contributed her expertise to various areas such as: Space Life Sciences; Bioastronautics, Human Performance in Extreme Environments, Rendezvous, Proximity, and Docking Operations, Landing and Recovery Systems, Engineering Integration, Flight Test, Risk Management, and Leading Proposal Development efforts. Ms. Gell is also a Certified Lean/Six Sigma Green Belt and has facilitated many Process Improvement Events.

Abstract

Amber will discuss her interest in space and exploration, especially human spaceflight, which is her ultimate goal. Ms. Gell's academic background and career experience depicts her active pursuit of that goal. She has worked on various programs for major Aerospace contractors. Ms. Gell is currently part of the team designing and building the Orion Spacecraft, the Multipurpose Crew Vehicle (MPCV), NASA's new spacecraft for Deep Space Exploration that will be used to take humans to the Moon, Asteroids, Mars, and beyond.

Sponsor: Intel



Institution

National Council for Curriculum and Assessment (NCCA)



Biography

Dr. Walshe is a science education officer with the NCCA.

Abstract

This talk will outline proposed curriculum and assessment developments in the Leaving Certificate sciences.

Chemistry Magic Show

David Katz
Sunday 10th, 10.30–11.30 am
The Strand Hotel

Institution

USA

Biography

Professor Katz has been a leader in performing chemistry outreach and enhancing the public understanding of chemistry for over 30 years.

Professor Katz earned his B.Sc. in Chemistry from Drexel University and his M.Sc. from Villanova University. Katz is an active member of the ACS and has worked to improve chemical safety and education through numerous national and local activities. Katz's first published work appeared in a 1968 copy of *Microchemical Journal* titled, "determination of halides with ion specific electrodes" and since then his work has been featured in countless publications, including the *Journal of Chemical Education*. Katz has also contributed work to many textbooks including his own textbook in 2005 titled "*The General Chemistry Laboratory Survival Manual*." Katz now manages his own website, www.chymist.com, where he profiles some of his experiments and provides tips and study guides for college students studying chemistry.



Abstract

awaiting abstract

Sponsor: Biopharmachem Ireland



The Animal Magic Road Show

Animal Magic
Sunday 10th, 11.45–12.45
The Strand Hotel

Institution

Animal Magic

Biography

I have been lecturing on animals and birds now for longer than I care to remember and I don't think I will ever get over the thrill of seeing a classroom full of children, showing their obvious enjoyment at the sight of a hawk flying around their desks, or the little 8 year old boy at a school in Kerry who said to me after a road show 'this was the best day of my life'. I still marvel at the skill and agility of the falcons swooping over an audience to catch the lure and the grace of the Barn Owl as she flutters down to the fist.

Abstract

We provide a range of wildlife and Natural History Road Shows for Libraries, Schools and Colleges and other Organizations. Specifically designed to both educate and entertain any age group. Each Visit can be tailored to suit specific projects, be it conservation, care, or awareness of nature.

We pride ourselves on our ability to gear our talks specially to suit any audience and we can assure you that the road show will be an experience which will be remembered for many years to come.

As with all our visits the Road Shows are very educational and interactive with lots of hands on experience, something you don't get at the zoo, we bring Nature to life.

Animal Magic





Professional Development Service for Teachers | An tSeirbhís um Fhorbairt Ghairmiúil do Mhúinteoirí

www.pdst.ie/schoolsupport.ie

LITERACY

SSE & strategies for improving oral language, writing, reading comprehension, and the use of broadcast /digital media across the curriculum.

NUMERACY

SSE & strategies for implementing problem solving, estimation, a common approach to maths language and a numeracy rich environment across the curriculum.

Subjects /Programmes & Generic Support

- Health & Wellbeing – PE, SPHE, mental health, anti-bullying and promoting the welfare & protection of students
- Junior & Leaving Certificate subject support & planning
- JCSP, TY, LCA & LCVP programme support
- School planning (policies)
- Co-operative learning / working with others
- ICT for teaching & learning
- Differentiation/mixed ability teaching

Integrating ICT

- eAssessments & ePortfolio
- ePlanning & Collaboration
- Tablet Technology Integration – Effective use, pedagogy.....
- Virtual Learning Environments (VLEs)
- SSE – On-line tools for gathering, collating & analysing relevant data

Visual - Visualisers, Animoto, Wordle, Tagxedo, Photo-story....

Auditory – Audacity, Vocaroo, Audioboo.....

Readng comprehension – Freerice, Studystack, Quizlet.....

Kinaesthetic – Tarzia, Cube Creator.....

PDST LEADERSHIP PROGRAMMES

- MISNEACH:** New Principals
TÁNAISTE: New Deputy Principals
TÓRAÍOCHT: Aspiring Leaders accredited by Maynooth University
FORBAIRT: Experienced Principals & ALGs
SPREAGADH: NAPD & PDST collaboration

PDST WEBSITES

- www.pdst.ie
- www.pdsttechnologyineducation.ie
- www.scoilnet.ie (portal for resources)
- www.teachercpd.ie (on-line courses)
- Ollscoil.net (PDST/HEI collaborations)

ASSESSMENT FOR LEARNING (AFL)

Learning intentions/context of learning/success criteria; effective feedback; questioning; Bloom's Taxonomy; self and peer-assessment strategies e.g. rubrics.

**Models of support:
Whole staff days, Croke
Park hours, subject
departments/groups of
teachers/ co-
ordinators.**

**It is essential to fill out
the on-line application
form @
www.pdst.ie/schoolsupport
in order for your
application to be
considered**



LEARN Renewables

School Workshops in Wind Energy

- **Free** to schools, we source suitable sponsors
- **Donation** of wind experiment kit to school
- **Hands-on** workshop building and testing turbines
- **Primary and Secondary level**, perfect for **Green Schools**
- **Customise** your workshop to suit your school

Teacher training workshops in renewable energy

- **EPV** approved Primary level courses – blended learning
- **Hands-on** workshop for Secondary level teachers in wind energy
- **Over 100** teachers have participated since 2011

Sign up online at www.learnrenewables.com

Follow us on Twitter @learnrenewables



Contact Helen for enquiries at helen@learnrenewables.com
or 089 4659390



ISTA ANNUAL CONFERENCE 2017

Host Branch: Kildare ISTA

Venue: Maynooth University & The Glenroyal Hotel

Date: 7th – 9th of April, 2017

For further details contact:

☎ 085 - 1273620 ✉ kwwconference2017@gmail.com

Looking forward to welcoming you to Kildare.



Exhibitors

AG Education Services

AMBER (TCD)

Animal Magic

Blackrock Castle Observatory

Budget School and Group Tours

CASTEL

Concept Cartoons

COOK

DELL

Edco

Educate.ie

Engage Partners

Exploration Dome

Folens

Gill Education

Health and Safety Authority (H.S.A)

Institute of Physics (IoP)

Intel

ISTA Bookshop

Junior Cycle for Teachers (JCT)

LabCup

Learn Renewables (DIT)

Lennox

Maritime Museum

PDST

PharmaChemical Ireland

ReelLife Science

Regeneron

Roboslam

Royal Society of Chemistry (RSC)

Saffron

Science & Technology in Action

Science Foundation Ireland (SFI)

SciFest

SEAI

Seal Rescue Ireland Education

Shaw Scientific

SSPC

Stryker

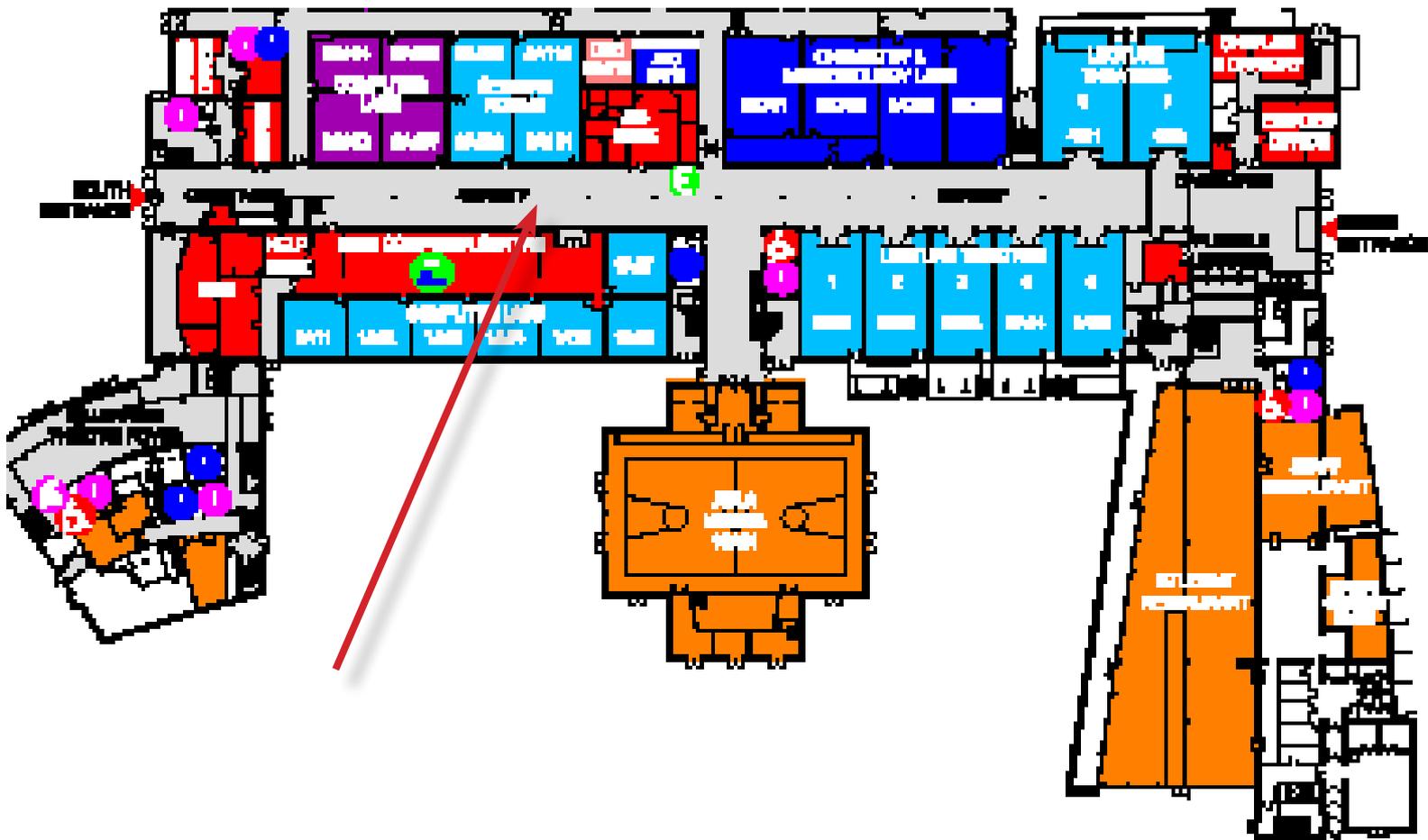
StudyClix.ie

Timstar

Uteach

LEGEND:

- P 1** VISITORS CAR PARK
- P 2** STUDENT CAR PARK
- P 3** STAFF CAR PARK
- 4** PREFABS
- 5** SPORTS HUB
- 6** ALL WEATHER PITCH
- 7** PLAYING PITCHES
- 8** MAIN BUILDING
- 9** RESTAURANT BLOCK
- 10** AULA MAXIMA
- 11** MILLENNIUM THEATRE
- + 12** BLOCK 12 HEALTH UNIT
- 13** BLOCK 13
- 14** BLOCK 14 STUDENTS UNION
- 15** BLOCK 15 INTERNATIONAL OFFICE
- 16** HEAC BUILDING
- 17** BIKE SHED
- 18** SPORTS CHANGING VILLAGE
- 🚌** BUS TO CITY CENTRE
- ♿** ACCESSIBLE PARKING



Programme Summary

Friday **Venue: – The Strand Hotel, Limerick**

- 17.00 - 19.00 Registration
18.30 – 19.00 President's reception: Tea / coffee and biscuits.
19.00 – 19.30 Welcome and official opening
19.30 – 20.30 To catch a comet, Part 1
20.30 – 22.30 Buffet Supper and Music

Saturday **Venue: – Limerick Institute of Technology**

- 8.45 – 9.30 Registration
9.30 – 10.20 To catch a comet, Part 2 Millennium Theatre
10.30 – 11.00 Molecular and cell biology and potential treatments for diseases 3A05
Why crystals matter to the real world 3A04
Science on Stage 4A01
The brain science of learning... 3A03
11.00 – 11.20 Tea/Coffee
11.20 – 12.00 Educating the innovators of the 21st century Millennium Theatre
12.10 – 13.00 Workshop Sessions 1
Molecular biology experiments for classrooms workshop 8A701
Chemistry and the Environment 8A706
Introduction to online RSC resources 1A11
Inquiry in the Physics Lab. 8A507
Robotic telescope into your classroom 1A12
Teaching enquiry through Mysteries Incorporated 8A503
Gross germs and bizarre bacteria 8A702
Laboratory safety 3A03
* Evidence in school learning (Session 1 only) 3A05
* Energy in Action (Session 1 only) 8A714
* Assessing inquiry skills in science (Session 2 only) 3A05
13.00 – 13.50 Lunch Room
13.50 – 14.30 Pecha Kucha session on Transition Year Science Millennium Theatre
14.40 – 15.10 BioMolecules from the sea 3A05
Nanotechnology 3A04
Wrapping light around a hair 4A01
Nature of Science 3A03
15.20 – 16.10 Workshop Sessions 2 (see above)
16.10 – 17.00 Deep Space Exploration Millennium Theatre
17.00 – 17.10 Conference raffle Millennium Theatre
17.10 – 18.00 ABM Millennium Theatre
18.00 – 18.30 Mass (in LIT) Millennium Theatre
19.30 – 20.00 President's reception (Strand Hotel)
20.00 – 22.00 Gala Dinner (Strand Hotel)

Sunday **Venue: – The Strand Hotel, Limerick**

- 10.00 – 10.30 Update on Senior Science Specifications Strand Hotel
10.30 – 11.30 Chemistry magic show Strand Hotel
11.30 – 11.45 Tea/Coffee
11.45 – 12.45 Animal Magic Wildlife Rescue Strand Hotel