

NEWSLETTER

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YSE 2008 attracts record entries



Left: Physics and Radar at the Institute's stand proved hugely popular with thousands wanting to measure the speed of their kicks. Centre and right: Ellie Townsend, Lisa O'Sullivan and Ciara McCarthy from Colaiste Choilm (Ballincollig, Co. Cork) won the Institute of Physics in Ireland Special Award and also scooped the Intel Travel Award and the runner-up prize in the group section for their project, "Let rip: the physics of perforations". The trio is shown with Mary Hanafin, Minister for Education and Science, and Chris Clark, CEO of BT Ireland.

The biggest, the brightest and the most crowded – the BT Young Scientist and Technology Exhibition (YSE) 2008 invites the use of superlatives, given that it saw its largest ever number of entries at a staggering 1416, which was up 11% from last year, with 500 individuals managing to make it through to the exhibition stage.

That fact is made even more astonishing, as BT CEO, Chris Clark, points out, given the decline in the number of students who are taking science at second level. Equally inspiring is the sight of the many sponsors and exhibitors who invested significant time, energy and resources in the event, particularly at a time of some economic uncertainty and heavy

academic pressure.

While the spread of the projects undertaken by students was vast – from testing the effectiveness of sun creams, the enhancement of sporting achievements, and mobile phone technology, to investigations of social networking websites, a common theme was of students choosing to explore topics of immediate relevance to their daily lives.

Concern for the environment and practical altruism were also recurring themes, with the winning project looking at better alternatives for the construction of emergency shelters.

With almost 100 projects in the chemical, physical and mathematical section and a further 66 in the technology

section, there is no shortage of talent in Ireland in this key area of science for the national economy. Among the many eye-catching projects in these fields was the investigation of the safety of Wi-Fi classrooms (a clean bill of health was given), a device to indicate whether food has been frozen, thawed and refrozen, and a web browser for the colour-blind.

Ellie Townsend, Lisa O'Sullivan and Ciara McCarthy from Colaiste Choilm, Ballincollig, Co. Cork, not only won the Institute's Special Award but also scooped the Intel Travel Award and the runner-up prize in the group section for their project entitled "Let rip: the physics of perforations".

The trio conducted

an in-depth analysis of perforations in plastics such as polyethylene, examining features such as the size, shape and distribution of perforations and their subsequent reaction to stresses using video techniques to observe them.

Their measurements showed that the stress distributions generated by narrow slit perforations are most favourable for producing clean tears at the correct points without warping or tearing the plastic, concluding that the gap between each perforation should be either the same size as or smaller than the perforation to produce a satisfactorily clean tear.

One of the most impressive aspects of these young

See p2 for Spring Weekend Meeting photos

scientists was the sheer effort that they had put into their group, devoting most of their free time over the past few months to the project and carefully following through on many intricate elements to the work. Ellie said: "The best bit of the research was actually finishing it!" However, the group's enthusiasm for the work was more than evident.

Colaiste Choilm has an impressive record with the exhibition. This year the school boasted 75 participants, 33 projects, 7 awards and a number of commendations, plus a number of students have re-entered the competition over a number of years.

Beyond the participants' projects there was much to see and do. The heaving masses of people at the Royal Dublin Society lend themselves to a statistical study in human behaviour. Analog's stand with its interactive Bike Challenge was a tremendous draw, as was Intel's robots solving the Rubik's cube in a matter of seconds. Physics and Radar at the Institute's stand proved very popular, with thousands coming to measure the speed of their kicks at goal and find out about radar through a series of quizzes while they queued to have a go.

Many thanks go to all of the volunteers from around the country who worked exceptionally hard, running the stand over the full length of the exhibition. The fastest kicks recorded over the three days were 107 kph by Robbie Benson from the Marist College in Athlone and 85 kph by Susan

Mullane Christ Kings in Cork.

So what makes this competition work so well besides the outstanding skills of the organisers? A combination of status, scientific relevancy and undoubtedly the sheer good crack of more than a thousand young exhibitors mingling with 36 000 visitors somehow comes together to make this a unique spot in the calendar.

From talking to participants, a clear draw is the chance to work on real open-ended projects, rather than simply to regurgitate exam-driven curricula. The face-to-face networking opportunities are also an attraction for many.

Coupled with this is the glamour of the entire experience, from the buzz of the opening ceremony with presenters Ian Dempsey and Aoibhinn Ní Shúilleabháin, to the excitement of the announcement of the prizewinners. The event gives a definite acknowledgement that just to participate is a significant achievement, conferring a status comparable to that given to school sporting stars.

Above all else, the exhibition demonstrates that, given the opportunities and incentives, there is no shortage of interest in science in Ireland. The task is to harness that and translate it into participation at third level and beyond. Perhaps the answer to the shortage in numbers taking science lies right here – make the study relevant and the outcomes clearly rewarding, both in status and financially.

Sheila Gilheany Institute policy officer

Queens University offers two events

The 35th Annual Conference of Physics Teachers will take place in the Department of Physics and Astronomy at Queen's University Belfast on Wednesday 25 June from 9.30 a.m. to 3.00 p.m. The event is open to all secondary-level teachers and those from further education colleges.

This year's programme will feature Wendy Sadler from Science Made Simple, a workshop on crocodile physics or data harvest, and a lecture by Prof. Bob McCullough on physics and the life sciences.

Further details can be obtained from Wendy Rutherford (e-mail w.rutherford@qub.ac.uk).

Horizons in Physics, which is an interactive series of lectures and demonstrations for fourth-year secondary-school students, will be held on Friday 20, Monday 23 and Tuesday 24 June in the Larmor Lecture Theatre at Queen's University, Belfast. Approximately 200 places are available for each of the three days. Further details are available from Wendy Rutherford (e-mail w.rutherford@qub.ac.uk).

IOP in Ireland's



Delegates at the Spring Weekend were exceptionally impressed to have the world's foremost physics-based venture capitalist, Dr Herman Hauser, address the meeting. Dr Hauser, who holds a PhD in physics from the Cavendish Laboratory, Cambridge, is co-founder of Amadeus Capital Partners. Best known for founding Acorn Computers, he went on to found and invest in a string of high-tech, high-profit companies, including the Active Book Company, Virata, Net Products, NetChannel and Cambridge Network Limited. Dr Hauser gave the audience a unique insight into the business of physics at the very highest levels. Both inspirational and realistic, he looked at the essential elements required for any start-up company, from initial concept through to end-product, all the while emphasizing that venture capitalists seek to fund not just the right product but also the right team.

Dr Ian Underwood (MicroEmissive Displays) gave a lecture entitled: "Out of the lab and into the market". His view on the weekend was: "Great meeting. Just the right mixture of talks and social activities."



Dr Ian Underwood of MicroEmissive Displays and co-inventor of the world's smallest colour TV screen spoke about "Out of the lab and into the market".

Spring Weekend 2008: “Is physics



Casual conversation during the coffee break.

Prof. Bob McCullough (Queens University Belfast) gave a lecture entitled “From proof of concept to commercialisation”. His opinion on the weekend was: “The IOP in Ireland Spring Weekend represents a unique opportunity for physicists in Ireland to interact both socially and scientifically. Over the years I have found it to be an extremely fruitful experience and have had several collaborative research projects with other groups in Ireland that have arisen directly from informal discussions in the bar.”

William Cirillo (chief technical consultant, Arboreal Technologies), who attended the Spring Weekend for the first time accompanied by his wife, said: “The organisation of the whole event was simply brilliant. The quality of the speakers was excellent and of very high calibre. I found the theme for this year particularly interesting as it covered many issues that I have been dealing with recently. From a social aspect the weekend was also very satisfying. We are both sold on the idea of making the Spring Weekend a regular entry on our calendar.”



John McClure (Queens University Belfast) receives the Rosse medal from Dr Hauser (Amadeus Capital Partners Ltd). He won the medal for his poster “Multiferroic magnetoelectric thin film composite materials studied using the magneto-optical Kerr effect”.



Dr Patrick Kelly (right; commercialisation executive, Technology Transfer Office, NUI Galway) with Alison Hackett (left; IOP representative) and Dr Sheila Gilheany (IOP policy officer). Dr Kelly’s presentation was entitled “Physics inside: transferring physics technology into commercial products”.

Dr Brian Manley (former IOP President) said: “The Spring Weekend combines physics, fun and family in perfect balance. We meet old friends and reminisce about times past. We make new friends among young physicists just starting out in this exciting world. We see young families growing up year by year and we feel part of one big family sharing the love of physics. We would not miss it.”



Left to right: Dr Brian Manley (former IOP President), Dr Emily Gleeson, and Deirdre King (Dublin Institute of Technology), who won the second prize in the poster competition with “Ultrasound, better with bubbles”. Tejesh Bandi (Cork Institute of Technology) won third prize with his poster “Novel trapping geometries for laser-cooled atoms”. The judges were Prof. John Beeby, Dr Emily Gleeson and Ms Emer Byrne.

...sics any of your business?"



Some delegates went into the woods of the Dun-a-Ri Forest Park during their leisure time on Saturday afternoon. Other activities were playing golf, watching the Six Nations 2008 rugby match between Ireland and Wales, and using the hotel's leisure centre.



The Nuremore Hotel and Country Club (Carrickmacross, Co. Monaghan) provided an excellent venue for the 37th Spring Weekend Meeting. The first meeting was held there in 1972.



Vida Given was honoured with a gift from IOP Ireland, presented by Paul Nugent (IOP Teacher Network coordinator) to acknowledge her excellent contributions as IOP Teacher Network coordinator in Northern Ireland.



Physicists are clearly children at heart. Members of the winning team of the Pub Quiz with a Physics Twist, "The One and Only", with their toy aeroplanes. The prizes were sponsored by Technology from Ideas. Dr Kevin McGuigan (right) was the quiz master.



Lively conversation at the champagne reception preceding the conference dinner.



Prof. Padraig Dunne with his daughter, Melissa, at Saturday's lunch.

Grehan receives a Teachers of Physics Award

This year, five teachers received a Teachers of Physics Award at the annual Institute of Physics Awards ceremony held on 24 January in London.

Michael Grehan of Belvedere College SJ in Dublin was one of the recipients. The award citation states: "In the opinion of the Institute of Physics, Michael is an outstanding teacher and an exemplary role model. His life is permeated with his passion for science, and his personality lends itself in a unique way to enthuse others with some part of that passion. He has a wonderful ability to make complex points clear and is always ready to go the extra mile to encourage his students".

Asked for his comments on the awards, Grehan wrote: "A bit of affirmation does you good. So does constructive criticism. I value both, especially from those who know teachers very well – our students. However, feedback can arrive from elsewhere as a complete surprise.

"At the Institute of Physics they do things extremely well and they know how to throw a party. On 24 January, following a scintillating after-dinner speech by Sir Michael Atiyah



Prof. Peter Saraga (Institute President) with two of the Teachers of Physics Award winners, Michael McVey and Michael Grehan.

in the Intercontinental London, Park Lane, they made presentations to 44 remarkably varied award winners. The work ranged from the physics classroom to condensed matter research, quantum entanglement and opening the way to new quantum information technologies.

"Previously I've enjoyed many IOP activities, including those that brought physics teachers together in Armagh, Belfast, Bundoran, Cambridge, Cardiff, Cork, Dublin, Dundalk and a lot more of the alphabet too! However, it was only at the Awards Dinner in London

that I saw something of the extraordinary breadth of the Institute's work in supporting physics research, not only in universities but in industry.

"If Sir Isaac Newton stood on the shoulders of giants, we had dinner with them. The guest list of 400 included Sir Michael Atiyah, Prof. Peter Saraga, Dr Simon Singh, Prof. Anton Zeilinger and, from Ireland, Prof. Denis Weaire of TCD and Dr Tony Scott of UCD. It was most enjoyable to be invited to dinner in their company.

"It appears that qualities that the IOP values in teachers include enthusiasm, a passion

for science and a willingness to help and encourage students – but then which of those could you do without in any science classroom? Many of the excellent teachers I know would agree with Socrates that wonder is the beginning of wisdom.

"I felt very honoured to be one of the five to receive the Teachers of Physics Awards 2008 and I'm most grateful to the people who kindly and discreetly responded to enquiries from the IOP last year. The other four recipients are John Cullerne of Winchester College in Hampshire, David Harries of the John Bentley School in Wiltshire, Michael McVey of Lourdes Secondary School in Glasgow and Ronna Montgomery of Bearsden Academy in Glasgow.

"The whole experience makes me more aware of how key it is for us to honour good work done by our students. In Robert Bolt's play, *A Man for all Seasons*, Sir Thomas More suggests to the politically ambitious Richard Rich that he'd be a fine teacher. Rich asks 'And if I was, who would know it?'. To this More replies: 'You, your pupils, your friends, God. Not a bad public that.'"

Women in Physics needs Irish team

The third International Union of Pure and Applied Physics International Conference on Women in Physics (ICWIP 2008) is to be held in Seoul, Korea, on 8–10 October 2008.

The event is dedicated to the presentation and discussion of latest developments and ideas regarding the status of women physicists in world communities. Teams are invited to attend as representatives of their country. See <http://www.icwip2008.org/> for details. To participate you must be an approved member of your country's team.

Ireland plans to send a team of three to five members (subject to funding). Interested applicants should send a copy of the following to Dr Eilish McLoughlin (e-mail

eilish.mcloughlin@dcu.ie or Dr Sile Nic Chormaic (e-mail S.NicChormaic@ucc.ie) by 28 April 2008:

- a copy of your CV;
- a paragraph about why you would like to attend;
- indications of possible funding sources (i.e. will you have funds available to cover the cost of attendance?).

Team members must be:

- part of the Irish physics community;
- available to attend the event;
- willing to be an active member of the team;
- willing to assist in obtaining funding (either individually or as part of a team);
- willing to assist in preparing the post-conference report;
- willing to attend discussion groups, to cover all parallel

sessions, and contribute where appropriate.

Ideally we would like the Irish team to cover the full scope of the physics community, from academics to industry, and education to consultancy.

While the majority of attendees are likely to be women, men with relevant experience and/or an interest in "women in physics" issues are welcome. We would like to encourage those at early stages of their career to apply, because this as an ideal opportunity to engage new people with "women in physics" challenges.

All applications will be assessed by a panel, including IOPI committee members. Applicants will be informed whether they have been successful by the end of May.

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The deadline for contributions to the next issue is 30 September.

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Dublin hosts Frontiers of Physics

The Teachers of Physics Annual Conference, Frontiers of Physics, will be held on 27 September from 9.30 a.m. to 4.00 p.m. at the School of Physics, University College Dublin, Belfield, Dublin 4. This will be a day of lectures, demonstrations and workshops for post-primary teachers of physics. It will aim to achieve the following:

- inform teachers of the exciting and innovative work at the frontiers of physics that is being carried out in Ireland;
- provide teachers with examples of simple and inexpensive physics

demonstrations;
● inform teachers of the latest developments and resources available in physics teaching.

Details will be sent to all post-primary schools in advance of the conference. The event is sponsored by the Institute of Physics in Ireland Education Group and the School of Physics at University College Dublin.

The assistance of the Second Level Support Service is greatly appreciated

For further information, get in touch with the Teacher Network coordinator, Paul Nugent (e-mail paulnugent@eircom.net).



This year's Tyndall Lecture entitled 'Living with a Star' was given by Dr Robert Walsh (University of Central Lancashire).

Tyndall lecture 2008 addresses a hot topic

Almost 2000 people attended the Tyndall Lecture, entitled "Living with a star" by Dr Robert Walsh, originally from Lisburn, NI. Dr Walsh read maths then gained a PhD in solar astrophysics at St Andrews University. He is a senior lecturer in the Centre for Astrophysics at the University of Central Lancashire, Preston. His main research interest is the Sun. He works with the European Space Agency and NASA using space-based observatories to examine the Sun's outer atmosphere.

Dr Walsh discussed how our Sun may appear tranquil and constant but is in fact a seething ball of million-degree

electrified gases. Recently the view of our closest star has been transformed due to several dedicated, space-based observatories. Using the latest images and movies, he tracked the flow of energy from the initial nuclear reactions at the heart of the star down to our own terrestrial environment.

The audience listened to the Sun ringing like a bell and appreciated how its magnetic field changes dramatically every 11 years. Then Dr Walsh explored whether the Sun really is the "ultimate neighbour from hell" through emitting solar storms, and he asked us all to predict the effect of space weather on Earth.

Pupils receive medals



Michael Coffey of Bangor Grammar School, Bangor, Co. Down, receives the A-level Award from Prof. Bob McCullough (left; IOPI representative at Queens University Belfast), accompanied by Mr Stephen Connolly (right; headmaster of Bangor Grammar School).



Eamonn Keane from Salesian College, Co. Kildare, receives the Leaving Certificate Award (shared) from Dr Eilish McLoughlin (chair of the Education Group of IOPI). His teacher is John Conway.



Antoinette O'Connor of Coachford College, Cork, receives the Leaving Certificate Award (shared) from Dr Sile Nic Chormaic (right; IOPI representative at University College Cork), accompanied by her physics teacher, Diarmuid Hickey (left).