Congratulations

Dr Ambrose Taylor, Reader in the Mechanics of Materials Division and Dr Tamer Zaki, Senior Lecturer in the Thermofluids Division have won two of the College’s prestigious President and Rector's Award for Excellence in Research Supervision 2013. The Award celebrates and acknowledges staff who are considered to have made an outstanding contribution to the enhancement of research supervision, encouragement and support.

And to

Dr Idris Mohammed, Research Associate in the Mechanics of Material Division who has been awarded the Department’s Margaret Fishenden Centenary Memorial Prize, in recognition of his excellent PhD thesis ‘Mechanical Characterisation of Confectionery Wafers’. The prize is awarded to a former PhD student of the Department, who is judged by the Director of Research, to have submitted the best PhD thesis over the previous five year period.

And to

Prof John Dear gave his inaugural lecture "Materials at their Limit", which was well attended by Imperial College and other university colleagues, Industrialist, friends and family. The three demonstrations organised by John's research team went well including the liquid Nitrogen frozen tongue polymer fracture test, shown above, performed by Dr Paul Hooper and John's son, James.

When new materials are used in structures such as buildings, it's crucial that they are evaluated properly to understand how both the materials and the structure may fail as a result of extreme conditions such as impacts or blasts. John's research group uses 3D speckle strain mapping techniques to assess the safety and function of materials including composites and laminated glass in buildings, marine vessels and vehicles under extreme conditions such as impact, explosive blasts and dynamic loading. This technique is combined with dynamic finite element modelling to optimise the material design for impact and blast mitigation. It has also been used with other strain measurement techniques to analyse composite sandwich components in offshore wind turbine blades and metallic alloys for the next generation of carbon-capture power-stations.

The three demonstrations organised by John's research team went well and a video of the talk is available on: Imperial College London website: http://wwwf.imperial.ac.uk/imedia/content/view/3732/materials-at-their-limit/
A team from the Department's third and fourth year undergraduates have built an all-electric super-bike which has competed in this year’s SES Zero TT race on the Isle of Man, which is one of the world’s most high profile zero emissions races. The race covers a 37 mile circuit and is considered by riders and teams to be one of the most gruelling races for electric motorbikes, so it was a considerable achievement for the team to come seventh.

Luke Foreman, fourth year undergraduate from the Department of Mechanical Engineering, said: “When the bike finished the race we were all ecstatic! We had a lot of mechanical problems during practice, but everything worked perfectly during the race. We were in a state of disbelief when we saw the bike reaching the finishing line.”

The students were in state of disbelief because for the past four years consecutive Imperial teams have endeavoured to take part in the Isle of Man TT Zero race, but have had limited success. Two years ago, the team made it to the island but failed to complete a lap, suffering mechanical problems when the motorbike reached the difficult mountain section of the track.

Last year, the students worked hard to carry out mechanical upgrades on the motorbike, but did not complete them in time.

This year it looked like bad luck was going to strike again when their rider Antonio Maeso broke his leg two days before the race. “We had many offers when news got out because I think a lot of riders wanted to get experience on electric motor bikes,” said Luke. “Antonio recommended David Madsen-Mygdal, who is a TT legend, has experience riding electric bikes, and holds the record for the amount of TT finishes, which made him a great choice.”

More than 80,000 visitors lined the course to watch the race, which included ten teams from around the world. “The most nerve wracking part of the race was when the bike was out racing,” said Luke. “For the rider I think the whole course is pretty extreme with lots of hills and a particularly difficult ‘hairpin’ corner, which presented a real design challenge.” The challenge for the team was fitting enough batteries into the bike so that it had the power to make it around the track, while keeping under the weight limit and enabling it to be handled effectively by the rider. Too many batteries can mean that the bike was very wide at the bottom, instead of being a conventional V-shape, which is better for handling on corners. The team overcame this challenge by reducing the spacing between the batteries to make the pack smaller. They also moved the battery pack higher up to avoid it scraping along the road during sharp turns.
After the race the team celebrated by having a big barbecue and a few beers with the team from the Ohio State University. Following the barbecue the team travelled into Douglas, the capital of the Isle of Man, where they soaked up the post-race atmosphere.

Imperial was one of only four university teams to compete and the only team who uses this project to contribute towards their undergraduate degree in mechanical engineering. The project is helping successive groups of students in the Department of Mechanical Engineering to learn more about how to build low emission vehicles of the future.

Buoyed by their success, the team are already discussing plans for the future. They collected data to use in future years in developing the bike and they are hoping to secure some funding to buy new motors and components to improve the performance of the bike.

“Now we know what we are doing and what level we need to compete at there is definitely scope for Imperial to do much better in future years,” Luke added.
**Mentions in the Press**

Dr Guillermo Rein from the Thermofluids Division was interviewed for an article in the magazine of the Society of Chemical Industry on the fertilizer plant explosion in Texas in April. The reference is "Explosive fertiliser facts", Chemistry & Industry 77 (5) [http://dx.doi.org/10.1002/cind.7705_3.x](http://dx.doi.org/10.1002/cind.7705_3.x)

**Spin-out Company**

A Departmental spin-out company, Sensor Coating Systems, was nominated at the pan-European ACES Award for the ‘Spin-out of the Year Award 2013’. The company was awarded runner-up in the category Materials and Engineering against a concrete company from Denmark. Dr Jörg Feist, managing director, comments: ‘Being a finalist at the ACES 2013 is a great achievement for the SCS team. The jury looked for both technology transfer and global business potential and ranked us top two in Europe.’ The company is currently engaged in an EngD programme from the RCNDE in Mech Eng and also with Dr Andrew Heyes from MechEng.

Sensor Coating Systems Ltd. (www.sensorcoatings.com) spun out of Southside Thermal Sciences (www.stscience.com) in 2012. SCS pioneers sensor technology based on luminescence materials for engineering applications in demanding environments. Its award winning technology enables accurate temperature detection, corrosion and erosion monitoring and life-time predictions and, in doing so, assists in optimising the operation of machinery, lowering fuel costs and maintaining material integrity. The main industrial sectors for application are the power generation industry, aero engines, automotive and machinery operating in extreme environments such as oil & gas and petrochemical plants.

**Conferences and Talks**

Dr Guillermo Rein from the Thermofluids Division delivered a talk on ‘Fire Dynamics and Structural Engineering: Crossing Boundaries for the Sake of Safe Infrastructure’ at the Summer School for Young Researchers COST TU0904 in Naples on 6th June.

Professor Janet Elzey, from the University of Texas at Austin, gave a talk in the Department on 14th June on “Combustion at the Extremes: Science and Technology of Superadiabatic Combustion” as part of the Thermofluids Seminars series of talks.

Professor Kostantinos Boulouchos from the Lab for Aerothermochemistry and Combustion Systems, Instut f. Energietechnik, ETH, Zurich gave a talk in the Department on 19th June as part of the Thermofluids Seminars series of talks.

**Hello to**

Dr Robert Bracewell, Research Associate in the Design Engineering Group, who started on 7th May  
Dr Peter Ellison, Academic Visitor in the Medical Engineering Group, who started on 6th May  
Dr Itzar Minondo, Academic Visitor in the Tribology Group, who started on 1st May.  
Professor Choongsik Bae, Academic Visitor in the Thermofluids Division, who started on 25th June

**Goodbye to**

Dr Rory Hadden, Research Associate in the Thermofluids Division who left on the 30th June.  
Dr Haitao Zhao, Academic Visitor in the Mechanics of Materials Division who left on the 31st May.  
Dr Leimei Lin, Academic Visitor in the Mechanics of Materials Division who left on the 30th June.

**Contributions for future months please to Claire Soulal**

Items of interest could include:

- Prizes, fellowships and awards (staff and students)
- Information on events, conferences, seminars that have taken place recently
- Mentions in the media, either College wide or external publications
- Short articles on new research interests in the Department
- New research grants