



SPRING 2011



# School of Mechanical and Systems Engineering

## Postgraduate Newsletter

Research news and items of interest

### Media recognises impact of MSE research

The research carried out by Dr Tom Joyce and Mr Dave Langton which identified the failings of an internationally used hip prosthesis has been highlighted in local and national press. The story was also featured in the BBC's Look North programme.

Dr Tom Joyce (pictured) and Dave Langton, an orthopaedic surgeon, have been working to better understand why total hip replacements fail. Their research has mainly been focused on a specific type of resurfacing hip prosthesis, the DePuy ASR, which was withdrawn in August 2010 after 93,000 had been implanted worldwide. Their work into understanding and therefore improving these vital artificial joints, which allow most patients with crippling arthritic diseases to return to pain free independence, continues.



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*For more details on this and other School research news stories see our Research News webpage at: [www.ncl.ac.uk/mech/research/news/](http://www.ncl.ac.uk/mech/research/news/)*

### "Best Paper" Prize for Microsystems Researcher

Congratulations to PhD student Harry Grigg who was awarded "The Best Paper Prize" at the recent International Microelectronics and Packaging Society (IMAPS) conference held in Arizona. Harry's paper "Towards a parametrically pumped Xylophone microbar Magnetometer" is the subject of his PhD thesis. This project, supervised by Barry Gallacher and sponsored by the EPSRC, aims to develop microscale devices to aid inertial navigation.

"Harry received a cheque for \$1000 for his hard work and will no doubt spend it wisely," said Dr Gallacher.



## Student profile: Chunyu Jin

*Current PhD Mechanical Engineering student*

"I joined the Thermo-Fluids group in 2008, and am working with Dr Ian Potts and Professor Mike Reeks. My project is concerned with Numerical Simulation and Experiment Investigation of Particle Transport and Deposition in Turbulent Boundary Layers, and this is sponsored by British Energy (Part of EDF). Applications of this type of flow, involving the mixture of two or more phases, are common in everyday life and in engineering systems, ranging from nuclear reactors to internal combustion engines, from oil and gas pipelines to droplet formation and rain processes in clouds.

"My work is an fascinating combination computational and experimental studies using state-of-the-art software and instrumentation. The experiments make use of modern Particle Image Velocimetry (PIV), a measurement technique which consists of illuminating, with a laser light sheet, a flow field seeded with microscopic particles, and then recording pair of images of particles, separated by short time intervals. In this way we can investigate the flow dynamics at a very detailed level.

"When not absorbed in my research I like swimming, running, music, and films."

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### Research Degrees:

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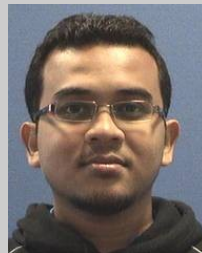
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## Typical Research Student Project

"Performance Envelope of Glass Fibre Reinforced Epoxy (GRE) Pipes"



**Mohd Shukry Abdul Majid**

*Current MSE Postgraduate Research Student*

**Abstract:** Present work is a collaboration project between the Composite Centre of Newcastle University and its industry counterpart from Future Pipe Industries. The main objective is to investigate the long term failure behaviour of GRE pipes under biaxial loading. This research is experimentally based and involved an investigation of the failure envelopes of GRE pipes of realistic diameter over the envelope of axial load and internal pressure combinations. A critical review is also made of the present methods of interpreting long-term stress limits from the short term failure data for composite tubes.

Supervisors: Prof Geoff Gibson, Dr Jack Hale

Project funding source: FuturePipe Industries/  
Malaysian Government

## Postgraduate Conference 2011

The School hosts an annual Postgraduate Conference at which 1st and 2nd year postgraduates present a paper on their work, and 3rd year researchers present a poster.

You can view abstracts from the 2011 conference, which took place in April, at [www.ncl.ac.uk/mech/postgrad/conference/pgconference.htm](http://www.ncl.ac.uk/mech/postgrad/conference/pgconference.htm).