

Rewards for young researchers

The 5th Annual Young Researchers' Conference was held at HQ recently. Kathy Stansfield reports

The future of structural engineering research is alive and well, as was shown at the fifth annual Young Researchers Conference. Eighteen young post-doctoral candidates presented their research to their peers and leading structural engineers from industry and academia. The event was opened by President Bob McKittrick, who welcomed the 30 participants, and sought to encourage their continuing involvement, telling them: 'Research is a vital component of our industry'.

Ian Liddell of Buro Happold gave a keynote speech with a difference. His presentation on the investigation into the failures of the retractable roof for the Montreal Olympic Stadium showed how the solution of technically challenging problems in industry required the same steps of hypothesis, investigation, experimentation and dissemination as research.

Oral presentation winners

First prize: Ben Bridgens, Newcastle University's Department of Civil Engineering.

His presentation was on 'Non-linear material models for coated woven fabrics'. His research project, funded by EPSRC and supported by Arup and Architen-Landrell, seeks to develop a better understanding of the behaviour of architectural fabrics which could help reduce over-design, provide better value to the client and increase the feasibility of financially marginal projects. He sees fabric structures as attractive because they fit in with modern ideas of sustainability, low energy construction and natural ventilation.

Second prize: Kevin Anderson, Dundee University

This research on 'Numerical modelling of the biomechanical performance of the cornea' is sponsored by the EPSRC. The aim is to develop a 'virtual' computer model of the human cornea using finite element techniques. The model will simulate a wide range of conditions including trauma injuries from sport, diseases such as keratotomy and myopia, and surgical procedures like radial and photo-refractive keratotomy. It will enable surgeons and researchers to see the effects and devise treatment.

Joint 3rd prize: Petter Wong, Manchester Centre for Civil & Construction Engineering (Manchester University and UMIST)

This presentation was on 'Thermal mechanics and structural performance of glass fibre reinforced polymer (GRP) composite structures at ambient and elevated temperatures'. Funded by Overseas Research Studentship and Manchester University, the project studies the thermal, mechanical and structural performance of GRP structures in fire and assesses the feasibility of using such materials as primary load-bearing structural members onshore.

Joint 3rd prizewinner: Martijn Veltkamp, Delft University's Architecture Faculty, Department of Building Technology

This research into 'Product development of structural systems in blob designs' is funded by the Dutch government. It aims to establish a systematised overview of combinations of structural schemes and systems for

The conference and awards for PhD students are sponsored by IStructE's Research Fund, EPSRC, IABSE, ICE, Buro Happold, Arup, and Flint Neil Partnership. Cheques for £400 (1st), £200 (2nd), and £100 (3rd) prize were awarded, and winners were also given a copy of the book Eminent civil engineers.

irregularly shaped parts of buildings. This should allow insights into structural efficiency and possibilities for alternative solutions, as well as providing feedback to the architect in the conceptual design phase on the formal consequences of the application of structural systems.

Poster session awards

Winner: Paul Ong of Cambridge University

His poster on 'Modelling of seabed interaction in frequency domain analysis of mooring cables' featured research featured work in collaboration with Noble Denton Europe and BP Amoco with financial support from DTI and BP Amoco.

Second prize: Eduard Toews, Cambridge University

His poster was on 'Analysis methods for adaptive structures'.

Third prize: Samantha Foster, Sheffield University

Her poster was on 'Developments to a performance-based fire engineering design method for composite frames'.

Judges' comments

Pal Chana comments: 'Once again the standard of posters was excellent with seven on display. In going around them and speaking to the authors, the judges were looking for evidence of understanding of the objectives, methodology, context and, of course, the quality of the research. The breadth of research on display was encouraging, with subjects ranging from Self Compacting Concrete, Bridge deformation monitoring, behaviour of slab column connections, composite frames in fire, analytical methods for adaptive structures and properties of titanium alloys. The winner described an elegant solution to a complex problem.'

David MacKenzie comments: Nine researchers were asked to present their work orally. The diversity of the research and its originality were a particular point of this year's conference. Topics ranged from the structural properties of the cornea (undertaken, rather surprisingly, in collaboration with a geotechnical engineer – until it was explained that the orthotropic nature of the matrix of the cornea resembles a soil matrix) to the analysis of 'blob' structures.

The oral presentations were all of a high standard, demonstrating the obvious familiarity of the researchers with the audio visual aids available to them. However, it was encouraging to see that there was no excessive dependence on electronic media – a lack of compatibility between projector and video format rendered one presenter in a potentially awkward spot. His spontaneity was impressive as he dealt with the minor technical glitch with ease. The delegates were polled to determine their thoughts on the choice of the best presentations. These choices closely matched the judges'.



Winners of the oral presentation from right: Martijn Veltkamp (joint 3rd); Ben Bridgens (1st); Kevin Anderson (2nd) and Petter Wong (joint 3rd)



Winners of the poster presentations from left: Paul Ong (1st); Eduard Toews (2nd); and Samantha Foster (3rd)