

July 02, 2018

## Welcome from Phil Watson, OFFshore ITRH Director

*Well, the winter months are upon us – but we are finding plenty of ways to keep ourselves busy!*

*A valuable session was organised with the Hub Advisory Board in May. We agreed how we will engage partners from outside of the Hub, settled on an approach to measure the value of our various research activities, approved a broad training programme for our PhD cohort (to be offered in partnership with the Australian Centre for LNG Futures) – and capped the time together with a social event between board members and Hub researchers.*



*The APPEA conference was held in May, this time in Adelaide. There was a definite feeling of optimism at this event, with the offshore oil & gas market showing signs of activity. A theme at this year's event was diversity and inclusion, which is a subject we also plan to address in the Hub as we move into the latter part of 2018 – watch this space!*

*Hub researchers have been active on the global scene, with major recent events in Madrid (OMAE) and Delft (CPT18). We have also been heavily involved in the ongoing Lloyd's Register Foundation 'Foresight Review' on offshore engineering – contributing to sessions in Southampton and St John's.*

***Engagement with the Hub is welcome – please don't hesitate to reach out.***

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## Hub News

**Prof Melinda Hodkiewicz Headed to the Alan Turing Institute**

Prof Melinda Hodkiewicz's recent application to the internationally competitive [Alan Turing Institute \(ATI\)](#) visiting researcher program has been successful! Melinda is headed to London in early June for a six week placement to commence work on a project entitled "Towards a Siri for Maintenance". The aim of this project is to identify a common framework for the open exchange of industrial maintenance data from which a Siri-type query capability may be established.



The ATI is the national institute for data science and artificial intelligence. Headquartered in the [British Library](#), London, the institute is named in honour of Alan Turing (23 June 1912 – 7 June 1954), whose pioneering work in theoretical and applied mathematics, engineering and computing are considered to be the key disciplines comprising the fields of data science and artificial intelligence. The five founding universities – Cambridge, Edinburgh, Oxford, UCL and Warwick – and the UK Engineering and Physical Sciences Research Council – are set to be joined by eight new universities – Leeds, Manchester, Newcastle, Queen Mary University of London, Birmingham, Exeter, Bristol, and Southampton – in 2018. The mission of the ATI is to make great leaps in data science and artificial intelligence research in order to change the world for the better. The OFFshore ITRH is currently working towards a Memorandum of Understanding with the ATI for future project opportunities.

The aim of the visiting researcher program is to generate collaborations, facilitate knowledge exchange and explore new or emerging research topics in data science. This prestigious program will offer Melinda the opportunity to interact with a wide range of world class researchers, as well as provide her with access to a range of industry partners with a head office in the UK.

***Many congratulations Melinda!***

### **Wenhua Zhao, Deputy Editor of Ocean Engineering**

Wenhua Zhao has recently accepted the role of Deputy Editor of [Ocean Engineering](#), a highly cited, well regarded international journal that focuses on the publication of original research and development in the field of ocean engineering. Wenhua was selected based on his expertise and reputation in offshore engineering and, significantly, is the first Deputy Editor out of the 12 current members to be chosen from Australia.



His responsibilities will include reviewing academic papers submitted to Ocean Engineering and attending an annual meeting of the editorial board to review and discuss the new developments for the journal.

Not only will Wenhua be providing expert advice on content, attracting new authors and encouraging submissions, he will be raising the international profile of both the [OFFshore ITRH](#) and the Shell Chair team, which was initiated to facilitate WA as a global centre for offshore engineering.

***Well done Wenhua!***

## Fresh Science Competition 2018 Winner Wenhua Zhao!

Congratulations to OFFshore ITRH Chief Investigator [Wenhua Zhao](#) who was recently selected as a winner in the Fresh Science 2018 competition for Western Australia.

[Fresh Science](#) is an annual national competition that helps early career researchers share their stories of discovery and gain national media coverage for their work.

As a “Freshie” Wenhua will attend a one-day media and communication training course that will provide him with the skills to communicate his research in a compelling way. He will practice being interviewed by journalists, present and field questions at a school forum at the Fremantle Maritime Museum, and finally share his research discoveries at a pub night event at the Brisbane Hotel in Perth on June 27<sup>th</sup>.

In addition, Fresh Science will write and publish a short media profile on Wenhua and his research. Ultimately one story per state will be written up as a press release and sent out to the media.

No doubt this experience will be invaluable to both Wenhua and his research!



## Conferences

### OMAE - 37th International Conference on Ocean, Offshore and Arctic Engineering



Members of the [OFFshore ITRH](#) joined international colleagues from industry, academia and government at the 37th International Conference on Ocean, Offshore and Arctic Engineering ([OMAE2018](#)) in Madrid, Spain from June 17–22, 2018.

The forum provided international researchers, engineers, managers, technicians and students from both scientific and industrial communities with the opportunity to present advances in technology and its application to industry.

In addition it provided an opportunity for global participants to exchange ideas and promote collaboration within ocean, offshore and arctic engineering.

OFFshore ITRH members in attendance included Wenhua Zhao, Scott Draper, David White, Ian Milne, Rasoul Hejazi and recent Tuck Fellowship recipient, Xiantao Zhang.

In addition to those presenting, Chief Investigator Wenhua Zhao co-chaired a session on Platform/Ship Motions and recent OFFshore ITRH visitor and Hydrodynamics specialist, Professor Bernard Molin had an Honour symposium dedicated to him on Marine and Offshore Hydrodynamics.

This annual conference is organized by The American Society of Mechanical Engineers ([ASME](#)) which promotes the art, science and practice of multidisciplinary engineering and allied sciences around the globe.

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## PhD Student Spotlight

**Lachlan Astfalck** is one of the PhD students in the Project 5: Floating Facility Data Analytics for Condition/Longevity Monitoring project stream. Lachlan's work concentrates on applying recent advances in the probabilistic characterisation of computer models to vessel motion models currently used on the North West Shelf of Australia.

As Lachlan explains, **"It is exciting to work between ocean engineers and statisticians in characterising uncertainties in offshore engineering models. It is hoped that the insights achieved from my research will make a difference to our understanding of ocean engineering operations."**



Bayesian statistics provide a natural framework to combine these sources of uncertainty, creating probabilistic predictions that incorporate our physical knowledge of the system, at the same time laying a foundation for formal decision making under uncertainty. The framework also allows researchers to reduce uncertainty in predictions by identifying which inputs are most influential on the model output and calibrating the model to actual observations of the process it attempts to mimic.

The reduction of uncertainty in predictions will ultimately lead to better forecasting, which in turn will allow for more efficient operations and production of offshore structures.

Lachlan is an active participant in the OFFshore ITRH [mentoring program](#). Incremental publication of Lachlan's research is listed [here](#), and further details are available on Lachlan's [profile page](#).

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## Publications

**Interested in learning more about our work? Below is a list of some of our more recent publications. A full list of our publications can be found [here](#).**

To request a PDF version please [contact us](#).



- Lu, Y., Zhou, T., Cheng, L., Zhao, W., Jiang, H. (2018) [Dependence of critical filling level on excitation amplitude in a rectangular sloshing tank](#). Ocean Engineering Volume 156, 15 May 2018, Pages 500-511
- Milne, I., Graham, J.M.R. (2018) [Vortex Shedding from Hulls in Close Proximity with Relative Motion](#). International Conference on Ocean, Offshore and Arctic Engineering OMAE2018-77151
- Hejazi, R., Grime, A., Randolph, M., Efthymiou, M. (2018) [Assessing the Impact of Riser-Soil Interaction Model on the Fatigue Life of Large Diameter SCRs](#). International Conference on Ocean, Offshore and Arctic Engineering OMAE2018-78713
- Zhang, X., Draper, S., Wolgamot, H., Zhao, W., Cheng, L. (2018) [Numerical Investigation of Effects of Bow Flare Angle on Greenwater Overtopping a Fixed Offshore Vessel](#). International Conference on Ocean, Offshore and Arctic Engineering OMAE2018-77487
- Wang, H., Draper, S., Zhao, W., Wolgamot, H., Cheng, L. (2018) [Development of a CFD Model to Simulate Three-dimensional Gap Resonance Driven by Surface Waves](#). Journal of Offshore Mechanics and Arctic Engineering OMAE2018

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Offshore Hub · The University of Western Australia · 35 Stirling Highway · Crawley, WA 6009 · Australia

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