



AUSTRALASIAN
FLUID
MECHANICS
SOCIETY

NEWSLETTER – No. 11

September 2018

Welcome to the eleventh newsletter of the Australasian Fluid Mechanics Society. In this edition we anticipate the upcoming 21st Australasian Fluid Mechanics Conference (21AFMC) in December and report on other events as well as outlining various new developments, including the formation of local chapters of the AFMS that are underway. The AFMS is able to support these developments that serve to advance Fluid Mechanics in and across the Australasian region through a sound bank balance and the energy and enthusiasm of its membership.

NEWS

21AFMC

Preparations for the 21st Australasian Fluid Mechanics Conference to be held in Adelaide, 10th–13th December 2018, are well underway. The call for abstracts attracted 390 submissions. The call for submissions of the full papers is now closed with approximately 350 received. The papers are now undergoing the review process through the auspices of the Local Organising Committee, chaired by Richard Kelso, and assistance from many AFMS members.

An excellent range of invited speakers will lecture at the conference; these are expected to include:

- **Professor John Eaton** (Stanford):
Magnetic Resonance Imaging and Machine Learning to understand and model turbulent mixing
- **Professor Ellen Longmire** (Minnesota):
Turbulence effects on aquatic predator/prey interactions
- **Professor Beverley McKeon** (Caltech):
Control of wall shear flows and the potential for “designer turbulence”

- **Professor Alfredo Soldati** (TU Wien):
Modelling and computation of interfaces in turbulent dispersed flows
- **Professor Jens Norkaer Sorensen** (Danish Technical U.):
Fluid Mechanical aspects of wind turbine wakes and wind farms
- **Professor Julio Soria** (Monash):
Three-component three-dimensional (3C-3D) fluid flow velocimetry for flow turbulence investigations
- **Professor Yvonne Stokes** (Adelaide):
Extensional flow theory with application to fibre drawing

For the first time in the conference series, the 21AFMC will provide child-care facilities for participants with young children.

For more details of the conference, please go to:

<http://afms.org.au/21afmc.html>

The AFMC is the major forum for Fluid Mechanicists in Australasia to meet, discuss, spark new ideas, strike up new collaborations and catch up with old and new friends in the community. So, please try to attend!

Fluids in New Zealand (FiNZ) 2018 Meeting Report

The Fluids in New Zealand (FiNZ) 2018 meeting was held on 8th-9th February 2018 at the University of Auckland, New Zealand. A total of 51 participants attended the event, including 29 students. The two-day event included 4 keynote talks by Professor Rosalind Archer (University of Auckland), Dr Heide Friedrich (University of Auckland), Dr Craig Stevens (NIWA) and Dr Timothy Anderson (AUT). There were also 38 presentations by New Zealand researchers and students, covering 8 different fluid-mechanics topics.

Consistent with its goal of promoting the dissemination of ideas between different sub-disciplines of Fluid Mechanics, FiNZ 2018 included a lunchtime workshop on research funding led by Professor Rosalind Archer and a tour of the University of Auckland Newmarket Innovation Precinct laboratory facilities.

Although previous FiNZ meetings have been held at either the University of Canterbury or the University of Auckland, next year's (2019) meeting will be held at the University of Otago, Dunedin. Fabien Montiel will lead the local organising committee.

The local organising committee is grateful for the generous support of AFMS for this event.

For more information, please see the Fluids in New Zealand website:

<https://fluidsinnz.wordpress.com/>.

Report kindly provided by Dr Colin Whittaker.



Discussions during one of the refreshment breaks at FiNZ 2018

Australasian Heat and Mass Transfer Conference (AHMTC) Report

The Australasian Heat and Mass Transfer Conference (AHMTC) is a biennial research forum organised by the Australasian Fluid and Thermal Engineering Society (AFTES), which is a technical society of Engineers Australia. AHMTC aims to disseminate new knowledge and promote technical application among the Heat and Mass Transfer community within Australasia for the benefit of the community at large.

The most recent of this conference series, AHMTC-11 was held at RMIT, Melbourne, 9th-10th July 2018, chaired by Professor Gary Rosengarten of RMIT. State-of-the art developments and research advances in the fields of heat and mass transfer were presented and discussed at the conference by internationally-renowned keynote and invited speakers, including Prof. Peter Stefan of Darmstadt Technical University, Germany, specialising on boiling and two-phase flows.



Left image: Conference Chair Prof. Gary Rosengarten (Right) introducing Keynote Speaker, Prof. Peter Stefan (Left); Right image: Delegates at the conference dinner

Around 40 research papers were presented, broadly covering topics on convection, conduction, radiation, turbulence, multi-phase flow, phase change, thermal storage, heat exchangers, micro-fluidic transport processes, computational methods and experimental techniques. Conference participation included all major Australian universities plus a number of international delegates mostly from New Zealand, China and Japan.

It has been unanimously agreed that the next AHMT conference (AHMTC-12) will be held at the University of Sydney in 2020.

Report kindly provided by Professor Tilak Chandratilleke, AFTES National Chair.

AFMS Summer School

The AFMS has decided to introduce a Summer School that will take place in December every two years in the 'off-years' of the Australasian Fluid Mechanics Conference. AFMS council member, Paul Brandner has been leading this initiative. The objectives for the Summer School will be to:

- Enable researchers and research groups throughout Australasia to network and learn of each other's work;
- Allow postgraduate students and ECRs to learn from senior researchers and to present their work;
- Permit all researchers to learn of the latest developments;
- Foster interdisciplinary connections;
- Build greater connections between computational and experimental research and groups focussed in each area;
- Support Australasian groups in developing directions on future challenges; and
- Advance development of fluids mechanics research in Australasia.

The location of the Summer School will move around the Australasia region dependent upon successful bids to host the event. The call for bids to host the first summer school in December 2019 has just been released; if you are willing to apply, you can find the guidelines for doing so on the AFMS website at:

http://afms.org.au/data/AFMS_SummerSchoolHostingGuidelines.pdf

ANNOUNCEMENTS

AFMS Local Chapters

The AFMS Council has decided to institute and support local chapters. The purpose of such local chapters is to:

1. To promote fluid mechanics at a regional level across communications platforms and audiences including, community, students, researchers and industry with an interest in fluid mechanics;

2. To provide an avenue to enhance communication between regional members and the national AFMS and provide a formal communication and engagement strategy to engage with, and respond to, local government and industry needs in fluid mechanics; and
3. To increase collaboration in fluid mechanics across regional and national levels.

A set of rules for local chapters (including the types of activities in which they would engage) has been posted on the AFMS website at:

http://afms.org.au/data/AFMS_Local_Chapters_Rules.pdf

The AFMS encourages its members to form a local chapter in their region if there is sufficient 'critical mass' and it can provide benefits to members in the region. A call for expressions of interest (in forming a local chapter) was recently sent out to all AFMS members.

AFMS Photo and Video Competition – not too late to enter!

The AFMS is running a Photo and Video Competition that aims to highlight the beauty, diversity and applications of fluid mechanics using visual media. This competition is open to all students, with 3 awards (\$500, \$300 and \$200 for 1st, 2nd and 3rd, respectively) for each category (photo and video). Judging criteria will include appeal to the general public, artistic merit, educational value, scientific novelty and promotion of fluid mechanics.

Entries will be showcased on the AFMS website at <http://www.afms.org.au/gallery.html>

For details of the rules and judging criteria for the competition, as well as instructions for submission, please go to

http://www.afms.org.au/data/AFMS_Photo_andVideoCompetition2018.pdf

Note that the deadline for submissions is 28th September 2018.

Amelia Earhart Fellowship

The Amelia Earhart Fellowship is a prestigious international fellowship for women pursuing a Ph.D./doctoral degree in aerospace-applied sciences or aerospace- applied engineering. Awarded annually, the Fellowship of US\$10,000 may be used at any university or college offering accredited post-graduate courses and degrees.

Students must be registered in a full-time PhD/doctoral program and completed at least one year of that program or have received a master's degree in an aerospace-applied field at the time the application is submitted. Applicants must not graduate before April 2020. Applications close 15th November 2018. For more information, please consult the documents on the AFMs website at:

<http://afms.org.au/data/AEFellowshipDescription.pdf>

Elections to AFMS Executive and Council positions

Nominations to serve on the AFMS Council and for the executive-officer roles will soon be solicited. The period of service is for the two years following the 21AFMC being held in December 2018. Please consider nominating for the following:

- ***Election of six Council Members.*** AFMS members may nominate themselves and those already on the Council may nominate to continue for the next period of service (a two-year term). Note that while the AFMS elects six members, other nominees may be co-opted (as non-voting members) onto the Council.
- ***Election of the four executive-officer roles,*** namely President, Vice-President, Treasurer and Secretary of the AFMS. Current office-bearers may serve for a maximum continuous period of: 4 years for President and Vice-President; 8 years for Treasurer and Secretary. AFMS members may nominate themselves and existing office-bearers may nominate to continue for the next period of service. The present incumbents of President, Vice-President and Secretary will have reached the maximum of their permitted terms at the end of 2018. Executive officers are automatically members of the AFMS Council.

If more than six eligible AFMS members are nominated for Council positions then an election may be called. If two or more eligible AFMS members are nominated for an executive-officer role, then an election will be called.

A formal notification of the foregoing will soon be sent to all AFMS members.

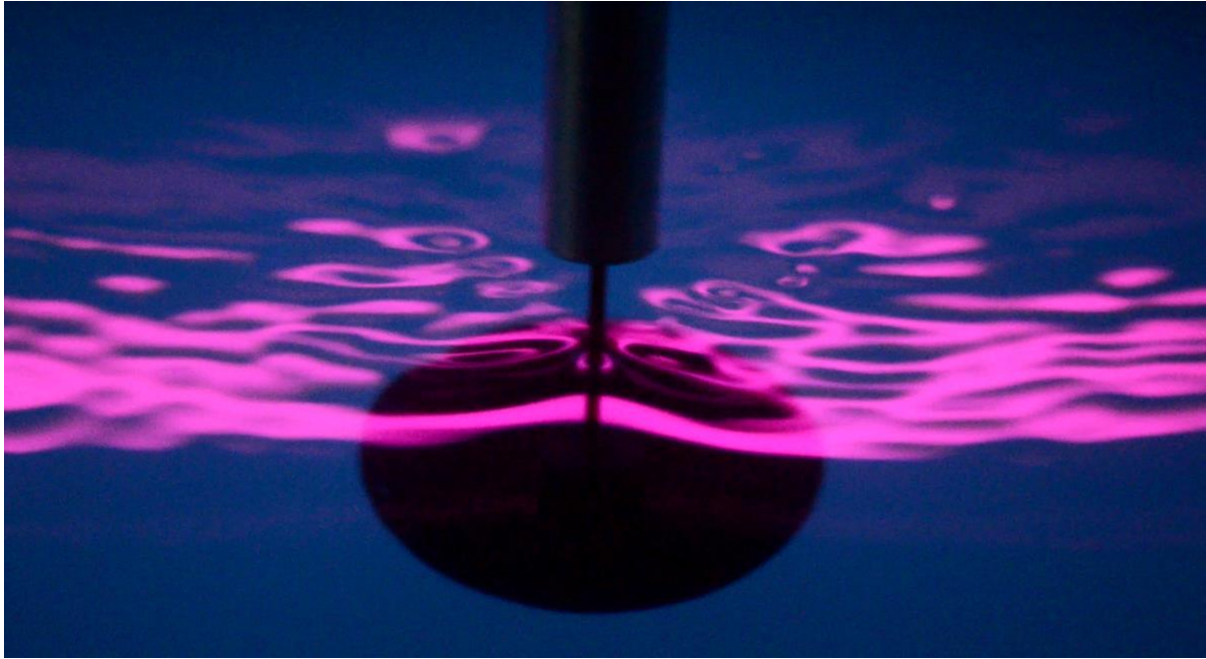
IN THE NEWS

The AFMS newsletter has introduced an 'in the news' section to communicate fluid-mechanics 'stories' that have an appeal to, and can be understood by, the broader community. What we will report upon in this section is effectively a form of outreach activity conducted by our members and an important part of the Society's mission. If you have any stories suitable for this section of the newsletter we would be happy to hear from you (send to t.lucey@curtin.edu.au). As an example of the type of item sought, please see AFMS newsletter #10 at http://www.afms.org.au/newsletter/AFMS_Newsletter10.pdf

ENDPIECE

If you would like to contribute an item for inclusion in a following newsletter, then please contact the secretary of the AFMS at t.lucey@curtin.edu.au The Society's website can be found at: <http://www.afms.org.au>

This newsletter's fluid-mechanics image – see following page – was communicated by (AFMS member) Anchal Sareen. **More submissions are requested for future editions of the newsletter and for the AFMS gallery.**



Free surface deformation patterns: The image shows the ultraviolet (UV) reflection patterns featuring the free surface deformation when a sphere touches the free surface at a Reynolds number of approximately 13,300. The UV lamp was placed just above the water tunnel facing downwards towards the free surface and the image was captured by a camera placed upstream of the sphere. The image is adapted from 'Vortex induced vibration of a sphere close to a free surface' by Sareen, Zhao, Sheridan & Hourigan, [JFM 2018, 846 pp 1023-1058](#).