

Event Details:

Date: Wednesday 2nd August

Time: 10am – 12:30pm

Venue: Woodside OceanWorks, [Indian Ocean Marine Research Centre](#), Level 1, UWA

Parking: Public Parking is available but limited

Cost: Free of charge but places are limited. RSVP essential - lngfutures-fems@uwa.edu.au

Abstract:

Most undergraduate courses on thermodynamic property calculations still focus on equations of state developed between 40 and 140 years ago. Cubic and virial equations of state are covered in any textbook on thermodynamics. However, in modern practice, fundamental equations of state are commonly used in many applications, particularly when high accuracy is required. Multi-parameter fundamental equations of state define the standard for calculating the properties of most technically relevant pure fluids and mixtures. For example, the GERG-2008 multi-parameter equation of state is the ISO standard for natural gas properties calculations.

With a focus on LNG this Masterclass will introduce into the theory of fundamental equations of state and demonstrate why they are superior to the conventional equations considered in most thermodynamics courses. Students attending the master class will work through industrially relevant examples, which will enable the students to perform simple operations with fundamental equations of state. Two very recent models, namely the Enhanced Revised Klosek-McKinley method, which is a new standard for LNG custody transfer, and the EOS LNG, will be highlighted in detail. As a “hands on” experience, an open source software tool will be distributed to participants, allowing them to conduct more complex property calculations typically needed for process simulations across a range of industries by using the most advanced fundamental equations of state available today.

About Professor Span:



Professor Roland Span studied mechanical engineering at Ruhr- University Bochum (RUB). He completed his PhD in 1992 under the guidance of Professor Wolfgang Wagner with a thesis introducing a new reference equation of state for carbon dioxide. This equation of state has become an internationally accepted thermodynamic property standard for carbon dioxide, which is widely used in process simulations related to air conditioning and refrigeration technology, in natural gas processing and CCS applications. In 2002 he became chair of Thermodynamics and Energy Technologies at University of Paderborn, Germany. In 2006 he moved to RUB, where he is chair of Thermodynamics. Professor Span has published highly cited scientific papers dealing mostly with theoretical and experimental work on thermodynamic properties. In 2014 Professor Span became Dean of the Faculty of Mechanical Engineering at Ruhr-University Bochum. Professor Span is a founding member of the C3eco movement.



The Australian Centre for LNG Futures is an Australian Research Council Industrial Transformation Training Centre. Led by Professor Eric May at UWA the Centre’s LNG focused research has funding from the ARC and nine industry partners. The LNG research has a strong industry focus and aims to increase growth, productivity and capabilities in this key Australian industry. lngfutures.edu.au