

# WELCOME

Welcome to the **first topical conference on cryogenic heat and mass transfer** hosted by University of Twente in The Netherlands on 4-5 November 2019.

This event is bringing together scientists and engineers of various disciplines connected to cryogenics. The delegates are from various academic and industrial entities.

The topics addressed include boiling, droplet evaporation, condensation, sloshing, cryogenics for aviation, cryogenic heat pipes, two-phase flow, liquid hydrogen storage, ortho-para hydrogen conversion, cooling of superconducting systems, applied cryogenics in life sciences, cryoablation, food freezing, gas-gap heat transfer, cryocooler, and cryogenics in electron microscopy.

To encourage young researchers to present their work, we devised a session where each speaker has four minutes using a maximum of four slides to pitch their research. This will be followed by a poster session.

The social event is planned on Monday evening with a gala dinner and an evening lecture on *whole body cryotherapy/cryostimulation* by Prof. Benoit Dugue.

We expect about 75 attendees from all over the world.

Enjoy your journey to the Netherlands and we truly hope for an inspiring meeting on our beautiful campus.

**Srinivas Vanapalli**  
Conference Chair

## SPONSORS



Monday 4 November 2019	
08:30	Badge collection
09:00	Opening of the conference <u>Srinivas Vanapalli</u> <i>University of Twente</i>
09:15	Welcome address <u>Jennifer Herek</u> <i>University of Twente</i>
09:25	Twente low temperature research history <u>Marcel ter Brake</u> <i>University of Twente</i>
09:40	Axial Sloshing of Liquid Hydrogen at low Bond Numbers with Superheated Walls <u>Michael E. Dreyer</u> <i>University of Bremen</i>
10:05	Heat Transfer to Nitrogen Droplets Evaporating in a Heated Liquid Pool <u>Huayong Zhao</u> <i>Loughborough University</i>
10:25	Impact dynamics and heat transfer characteristics of liquid nitrogen drops on a sapphire prism <u>Michiel van Limbeek</u> <i>University of Twente</i>
Coffee break	
11:15	A possible role for LNG in meeting the energy demands of aviation <u>Arvind Gangoli Rao</u> <i>TU Delft</i>
11:35	Projection of cryogenic fluids: a comparison between liquid nitrogen and liquid carbon dioxide <u>Raphael Grandeau</u> <i>Air Liquide</i>
Poster pitches	
11:55	Ortho-Para hydrogen converter design for a 0.5 TPD scale of hydrogen liquefaction plant <u>Sarng woo Karng</u> <i>Korea Institute of Science &amp; Technology</i>
11:59	Design and demonstration of an HTS degaussing system <u>Izak Hanse</u> <i>University of Twente</i>
12:03	Thermal Analysis of He II cooled Nb3Sn superconducting coil samples <u>Kirtana Puthran</u> <i>CERN</i>
12:07	In-Flow binary mixture composition measurement <u>Nando Tolboom</u> <i>University of Twente</i>
12:11	Thermodynamic analysis of simple Linde-Hampson hydrogen liquefaction systems with G-M cryocoolers <u>Hyunmuk Lim</u> <i>Korea Institute of Science &amp; Technology</i>
12:15	Performance improvement of a PCM cold box by two bilayers Configuration <u>Ankit Anand</u> <i>University of Twente</i>

Monday 4 November 2019	
12:19	Frictionless flows <u>Arvind Dev</u> <i>University of Strasbourg</i>
12:23	Hypersonic stochastic switch <u>Charles Janeke</u> <i>Constellation Dynamics LLC</i>
12:27	High-dynamic Superconducting Linear Motor <u>Jeroen ter Harmse</u> <i>University of Twente</i>
12:31	Free Piston Stirling Heat Pump for deep freezers: Update and direction <u>Hidde Norder</u> <i>University of Twente</i>
12:35	Experimental characterization of Al – Cu thermal contact resistance below 50 K <u>Goncalo Tomas</u> <i>University of Twente</i>
Lunch break/ Poster session	
14:10	Cryogenic Pulsating Heat Pipes – Update and Direction <u>John Pfothenhauer</u> <i>University of Wisconsin Madison</i>
14:30	Heat and Mass transfer in Cryogenic Condensers <u>Friedhelm Herzog</u> <i>Messer group</i>
14:50	Two-Phase Flows Investigations in Liquid Propulsion Systems: “TRL Booster” Research at the von Karman Institute <u>Jean-Baptiste Gouriet</u> <i>Von Karman Institute</i>
15:10	Complete Transient Droplet Evaporation Modelling: Deviation from the $d^2$ Law under Cryogenic <u>Josh Finneran</u> <i>Loughborough University</i>
Coffee break	
16:00	Liquid Hydrogen Storage: Status and Future Perspectives <u>Hendrie Derking</u> <i>Cryoworld</i>
16:20	Predicting improved cooling speed of metals coated with low conductive materials in liquid nitrogen <u>Sahil Jagga</u> <i>University of Twente</i>
16:40	Numerical Investigation of Non-isothermal Axial Sloshing of Liquid Methane <u>Niklas Weber</u> <i>University of Bremen</i>
18:30	Social program + Dinner
20:30	What everybody should know about whole-body cryotherapy/cryostimulation <u>Benoit Dugue</u> <i>University of Potliers</i>
21:00	Drinks

Tuesday 5 November 2019

- 09:00** Applied Cryogenics in Life Sciences: The Case of Whole Body Cryotherapy Chamber  
Jean-Pierre Bernard  
*Air Liquide*
- 09:20** Non-Metallic Cryoprobe for Cryo-ablation  
John Pfothenhauer  
*University of Wisconsin Madison*
- 09:40** Water losses during freezing: key influencing factors  
Didier Pathier  
*Air Liquide*
- 10:00** Cryogenic tissue fixation for molecular medicine  
Henk Dekker  
*Amsterdam Medical Center*
- 10:20** Cryoablation  
Kristian Overduin  
*Radboud UMC*
- Coffee break
- 11:10** Heat and mass transfer analysis for the design of the cryogenic system for the HLLHC IT String  
Gabriella Rolando  
*CERN*
- 11:30** Rotor Cooling System for the Assumed superconductive Motor  
Ruud van der Woude  
*Demaco*
- 11:50** Hydrogen gas gap heat switch working in 150-400 K temperature range  
Jorge Barreto  
*Lisbon University*
- 12:10** Thermal conductance of interleaving fins  
Michiel van Limbeek  
*University of Twente*
- 12:30** Heat transfer inside Cryocoolers and its impact  
Tonny Benschop  
*Thales Cryogenics*
- Lunch break
- 13:50** Low-vibration and drift miniature cryogenic stage for Cryo-EM applications  
Pieter-Paul Lerou  
*Demcon Kryoz*
- 14:10** Automated cryo-EM sample preparation by pin-printing and jet vitrification  
Peter J. Peters  
*Maastricht University*
- 14:30** VitroJet: next generation sample preparation for cryo-EM  
Bart Beulen  
*Cryosol World*
- 14:50** High-Resolution Cryo-Electron Tomography – Current State and Future Prospects  
Sebastian Tacke  
*Max Plank Institute, Dortmund*
- 15:15** Closing ceremony

# Cryogenic Heat and Mass Transfer

4-5 November 2019



## PROGRAM



UNIVERSITY  
OF TWENTE.

Applied Thermal  
Sciences lab

