

# CRYOUSERS



## **CryoUsers 2022 Conference Summary**

**5<sup>th</sup>– 7<sup>th</sup> September**

**University of Nottingham**

**After a break due to the Covid pandemic CryoUsers went ahead with approximately 85 delegates and sponsors attended the University of Nottingham at the beginning of September 2022, having attended CryoUsers previously this was the first time that Nottingham have hosted, the conference team did a first-class job, with comfortable accommodation, excellent food at Cripps Hall and a splendid campus. Nottingham's science highlights include John Ambrose Fleming who was famous for "Flemings right hand rule" and a blackboard that has Albert Einstein workings preserved in pride of place in the physics building.**

**The Delegates and Sponsors arrived on the Monday afternoon and shared coffee and an evening meal before the full meeting started on the Tuesday. The meeting began with an address to all by the organising committee. Talks on the first day included a welcome address by Professor Tony Kent who gave a brief account of Nottingham's physics history and current low temperature and NMR research and was followed by topical talks by Dr Alex Jones who presented results of a neutron imaging experiment that showed images and video results of a working dilution refrigerator, Wilhelm Vorbuchner discussed new innovative features in Vorbuchner's cold box designs that increase efficiency and allow for greater Helium liquid production, the delegation then broke for coffee and had some time to visit the sponsors displays.**

**Simon James updated on the current Helium shortage from an Air Liquide perspective, Joerg Juengst gave some insights on how improvements can be made to the Linde Kryotechnique TCF20 cold box and Dr Andrew Chew presented vacuum solutions, this was followed by a break for a buffet lunch.**

**Lunch was followed by a short session with more topical talks by John Teah who gave an interesting introduction into the STEP fusion reactor project, Dale Keeping described the Helium Recovery Plant at the ISIS Neutron and Muon source with some well received ideas on saving manpower and Helium.**

**After a short break Dr Alex Jones delivered a second talk regarding the expansion of the temperature range and improvement of thermal contact of dilution refrigerator systems, Colin Middleton from BOC gave a second insight into the current Helium and Industrial gases situation, Dr Oleg Kirichuk talked about the Bizarre properties of liquid methane and gave some insights into what one would expect to experience on some of the planets and moons as well as experimental**

data carried out on our own planet. Juraj Bella finished the afternoon session of talks with a look at Edinburgh Universities Helium Recovery system.

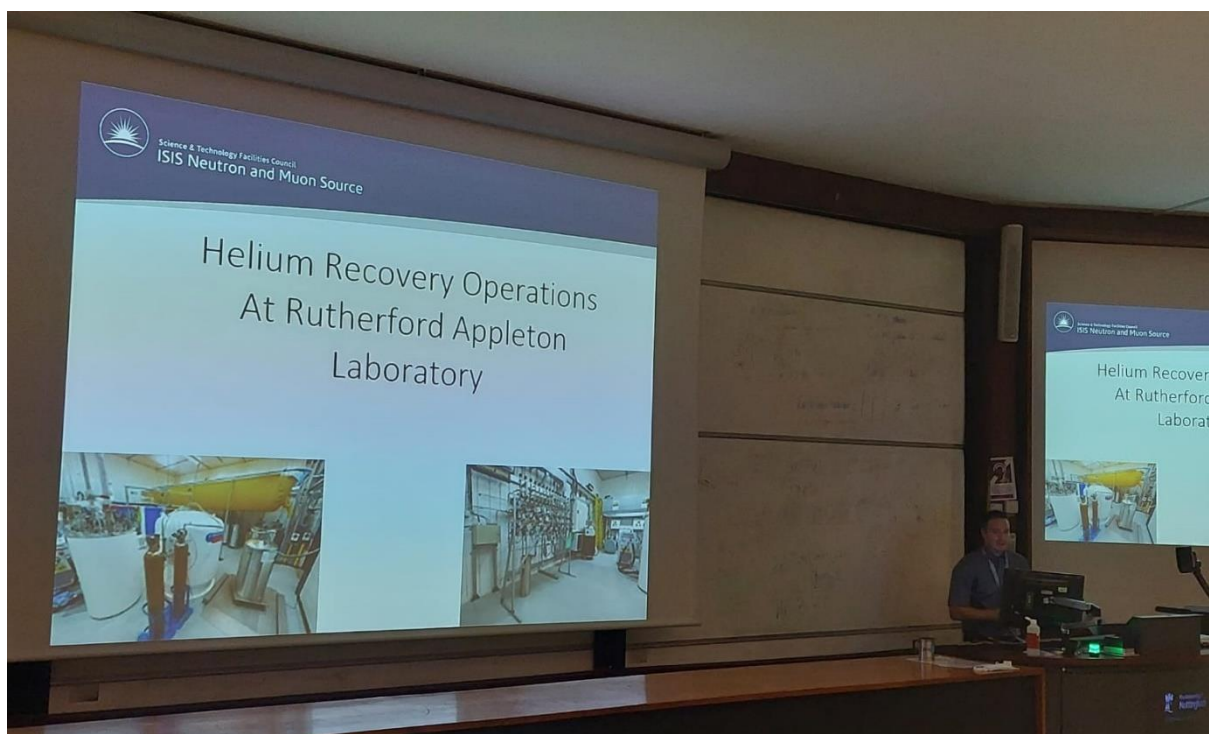
The Helium Recovery Team at the University of Nottingham then gave a tour of the facilities before a break and then the meetings banquet.

The CryoUsers community had pre-dinner drinks at the Cripps Hall bar before a wonderful four course meal which was capped with the largest cheese selection imaginable and a fine port.

Wednesday began as Tuesday ended with time spent networking with delegates and sponsors alike until time to revisit the lecture theatre for the University of Nottingham's Professor Phillip Moriarty overview of scanning probe microscopy and some of the cryogenic equipment used to study materials at low temperature and high magnetic fields. Stephen Alford and Ian Taylor presented GRE and the manufacture of super insulated vacuum lines with examples of systems that have been manufactured for use with high vacuum and closed cycle refrigerator systems.

After coffee the final talks were from Linde Kryotechnique's Daniel Heusser who discussed increasing Helium plant efficiency with a dynamic gas bearing turbine upgrade and showed examples of this at CERN and also a compressor upgrade carried out at the Paul Scherrer Institute in Switzerland. Richard Down presented work on the carbon footprint to produce a litre of liquid Helium of the ISIS liquefaction plant at Rutherford Appleton Laboratory, the values obtained were compared with Helium purchased through the gas companies.

CryoUsers 2022 ended with thanks to all in attendance in contributing to a very successful meeting which included 14 sponsors and some incredible feedback and excellent networking, there were discussions regarding the next venue which will take place in either Durham, Leeds or Southampton in 2024.





## Program Itinerary

### Monday 5th September

15:00 – Delegates, sponsors arrive, tea and coffee

19:00 – Evening meal

### Tuesday 6th September

08:00 – Breakfast

09:00 – Sponsors area

09:40 – Opening Address - **CryoUsers Committee**

09:45 – Welcome - **Professor Tony Kent** – University of Nottingham

09:55 - Talk - [Alex Jones – Neutron Imaging a Dilution Refrigerator](#)

10:15 – Talk - [Wilhelm Vorbuchner – Cryogenic facilities in research](#)

10:35 – Coffee, Sponsors area

11:00 – Talk - **Simon James** – Air Liquide Helium & Industrial Gas Update

11:20 – Talk - [Joerg Juengst – Saving Helium by increasing energy efficiency and reducing Helium losses](#)

11:40 – Talk - **Andrew Chew** – BOC vacuum solutions

12:00 – Lunch, sponsors area

13:30 – Talk - **John Teah** – The STEP fusion reactor project

13:50 – Talk - [Dale Keeping – Helium Recovery Operations at Rutherford Appleton Laboratory](#)

14:10 – Coffee, Sponsors area

14:40 – Talk - [Alex Jones – Expanding our Ultra-Low Temperature Range](#)

15:00 – Talk - **Colin Middleton** – BOC Helium & Industrial Gas Update

15:20 – Talk - [Oleg Kirichek – Bizarre properties of cryogenic methane](#)

15:40 – Talk - [Juraj Bella – Helium Recovery in NMR](#)

16:00 – Optional Tour - **Nottingham Labs, Cryogenics and Helium Recovery**

18:00 – Pre dinner Reception - **University of Nottingham Cripps Hall**

18:30 – Conference Dinner - **University of Nottingham Cripps Hall**

### Wednesday 7th September

08:00 – Breakfast

09:00 – Sponsors area

- 09:30 – Talk - **Professor Phillip Moriarty – University of Nottingham An overview of scanning probe microscopy**
- 09:50 – Talk - **Professor Phillip Moriarty – University of Nottingham An overview of scanning probe microscopy**
- 10:10 – Talk - **Stephen Alford and Ian Taylor – GRE Gas and Liquid Controls**
- 10:30 – Coffee, Sponsors area
- 11:00 – Talk - **[Reto Stoessel – Efficiency increase of cryoplants by retrofitting with state-of-the-art turbine technology](#)**
- 11:20 – Talk - **[Richard Down – Helium Recovery Highlights & Carbon Footprint 2022](#)**
- 11:40 – Close of meeting, next venue discussion
- 12:00 – Lunch
- 13:00 – Finish