

The 107th GIST Seminar

A discussion on commercial fusion technology, timelines, and policy

Speaker:

Dr. Bob Mumgaard

CEO, Commonwealth Fusion Systems



- ◆ **Date:** 17:30-19:00, February 28, 2023 (Doors open at 17:00)
- ◆ **Venue:** 5th Floor, Lecture Room L, GRIPS
7-22-1 Roppongi, Minato-ku, Tokyo
<http://www.grips.ac.jp/en/about/access/>
- ◆ **Organizer:** GRIPS Innovation, Science and Technology Policy Program (GIST)
- ◆ **Language:** English
- ◆ **Outline**

Fusion energy has made significant scientific advances over the past several years, most notably the US's National Ignition Facility's net-energy breakthrough in December of 2022. However, a number of private fusion companies in U.S.A. argue that they are on a faster path to turning these scientific advances into commercial energy production at scale, many planning to deliver first electrons to the grid in the early 2030s. What is the state of commercial fusion energy technology, what are the timelines for deployment, and what government policy can help ensure fusion is ready in time to meet global climate goals?

Commonwealth Fusion Systems is the leading company to have fusion into commercialization.

At this seminar, Dr. Bob Mumgaard will give his views and some suggestions to us.

In Japan, at the Gx(Green Transformation) roadmap, fusion is one of the 5 potential technologies

for future deployment. However it will be commercialize after 2050 in which other 4 technologies would be in place.

What are the difference between U.S.A. and Japan?

To discuss these questions, we will hear from two leading private fusion companies in Japan as discussants.

After three presentations, Prof. Hisanori Nei of GRIPS will moderate the panel discussion and Q&A sessions.

◆ Speaker's Short bio

Dr. Bob Mumgaard is Chief Executive Officer and Co-Founder of CFS and is responsible for the strategic vision and direction of the company, paving the way for a future of clean unlimited fusion energy. Since co-founding CFS in 2018 with a mission to commercialize fusion energy, Mumgaard has grown the company to more than 200 employees and raised more than \$2 billion from some of the world's leading investors. CFS has built a reputation as a private commercial fusion company with a scientifically validated path to commercialization and Mumgaard is a sought after thought leader on innovation in clean energy technologies, frequently speaking at prominent energy events, engaging with government on energy policy, and has played a key role in the founding and growth of the Fusion Industry Association. Mumgaard performed his PhD work at MIT on the Alcator C-Mod tokamak. During this time, he contributed to the design of several small superconducting tokamaks for a variety of physics missions using high temperature superconductors. Mumgaard holds a PhD in Applied Plasma Physics, a MS in Nuclear Engineering from MIT, and a BS in Mechanical Engineering and Engineering Physics from the University of Nebraska.

◆ Discussants

Dr. Colin Baus, Head of Plant Technology, Kyoto Fusionneering



Dr. Baus is a physicist and researcher who started out in particle physics research at CERN laboratory. Colin spent many years working on the CMS experiments at the largest physics laboratory in the world. He was involved in data analysis, modelling and hardware work together with 3500 scientists from the CMS collaboration. His contributions to the particle collision

modelling with data from cosmic ray experiments are now the gold standard for “min-bias” events simulation. He also made advances to the understanding of proton collisions with heavy ions (Glauber theory). He now pursues the dream of clean energy and is devoted to making fusion reactors possible from an engineering perspective and his main focus is the development of an efficient and economical liquid blanket for fusion reactors that is able to cope with the high neutron particle flux. He holds a PhD degree in particle physics and a Ms in astroparticle physics from KIT, Germany

Dr. Junichi Miyazawa, Co-CEO and the Head of Technology, Helical Fusion



Dr. Junichi Miyazawa is one of the two presidents and co-founders of Helical Fusion Inc. and is responsible for the technical aspects of the company. Junichi joined the National Institute for Fusion Science (NIFS) in 1997 and has since been involved in plasma experiments in Large Helical Device (LHD) and helical fusion reactor design for 25 years. While a plasma scientist, he has also created new ideas for high-temperature superconducting magnets, divertors, and blankets. Junichi has published 32 first-authored papers and 189 co-authored papers so far. Junichi retired from NIFS in January of this year to concentrate on his work in Helical Fusion. Junichi holds a master's degree in nuclear engineering from the University of Tokyo and an Ph.D. in fusion science from SOKENDAI during his employment at the NIFS.

Program

- 17:30-17:35 Introduction by Prof. Hisanori Nei(Moderator)
- 17:35-18:15 Presentation by Dr. Bob Mumgaard (Presenter)
- 18:15-18:35 Discussion by Dr. Colin Baus and Dr. Junichi Miyazawa
- 18:35-19:00 Open discussion and close

◆ **Moderator**

Hisanori Nei, Professor at GRIPS

◆ **Warnings**

This is an in person seminar. Following precautionary measures for Covid19 are in place.

-Please wear mask inside of the lecture room.

-Please respect the max capacity of people in the lecture room and keep good distance when you are in the lecture room.

-The event is subject to cancelation due to the situation of Covid-19.

◆ **Registration**

Please register at this registration form (<https://forms.gle/X41EdvtBjGEDu26k7>) by 17:00, Feb.22.

If you cannot open the form, please send email to GIST Secretariat, gist-ml@grips.ac.jp.

Registration email must include: 1) your name, 2) institution, 3) position, and 4) e-mail address.