

also provided a platform for participants to exchange ideas, addressing wisdom and seek cooperations.

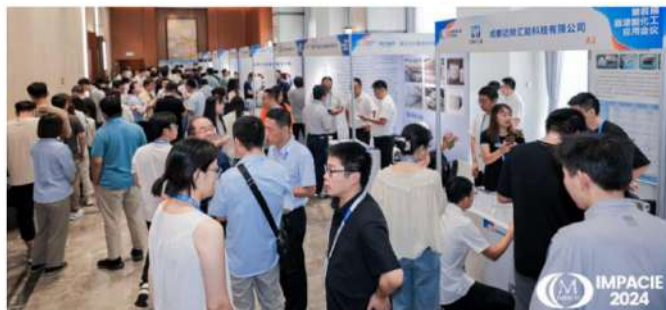


Fig. 5: Exhibitor communicating with participants.

Report on the Royal Society discussion meeting: Microwave science in sustainability

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A recent two-day scientific discussion meeting held at the Royal Society in London on the 13th and 14th of May 2024, brought together over 150 participants both in person and online to explore the role of Microwave Science in Sustainability (**Figure 1**).



Fig. 1: Social media card of the event.

The event, organised by Professor Daniel Slocombe and Professor Adrian Porch from Cardiff University, drew a diverse audience of researchers, industry professionals, and policymakers from across the world, all focused on the potential of microwave technologies to contribute to sustainable development.

The meeting was structured to encourage in-depth discussions and meaningful exchanges on the latest advancements in microwave science. Unlike traditional conferences, this event fostered a dynamic and interactive environment, with lively debates that addressed some of the most pressing challenges in the field.

The opening session set the tone for the event, focusing on how microwave technologies can enhance recycling processes and support a circular economy. The presentation highlighted the potential of microwaves to improve energy efficiency and effectiveness in material recovery, sparking a robust discussion on the practical implementation and scalability of these technologies.

Another key presentation explored the use of microwaves in green chemical processes. The discussion emphasised how microwaves can drive more sustainable chemical reactions by reducing energy consumption and minimising the use of harmful solvents. This approach offers promising avenues for advancing green chemistry, making it more environmentally friendly and efficient.

The second day continued with a focus on the application of microwaves in sustainable material processing. Research was presented on the potential of microwaves to create new materials with reduced environmental impacts, offering significant benefits to the manufacturing sector. The discussions highlighted the ability of microwave technologies to lower carbon footprints and improve material properties, indicating a strong potential for future developments in sustainable manufacturing.

Throughout the meeting, discussions were notably vibrant and collaborative, reflecting the

critical importance of shared perspectives in addressing the opportunities and challenges presented by microwave science.

An associated special issue of the Philosophical Transactions of the Royal Society, the world's oldest scientific journal, will be published later in the year to mark the event. For further details and to watch the recorded presentations visit: <https://royalsociety.org/science-events-and-lectures/2024/05/microwave-science/>.

Ricky's Afterthought:

Fusion, electricity use and electricity utilisation

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Latest reports suggest that large fusion reactors using the Tokamak principle (**Figure 1**) will not be operational for decades.

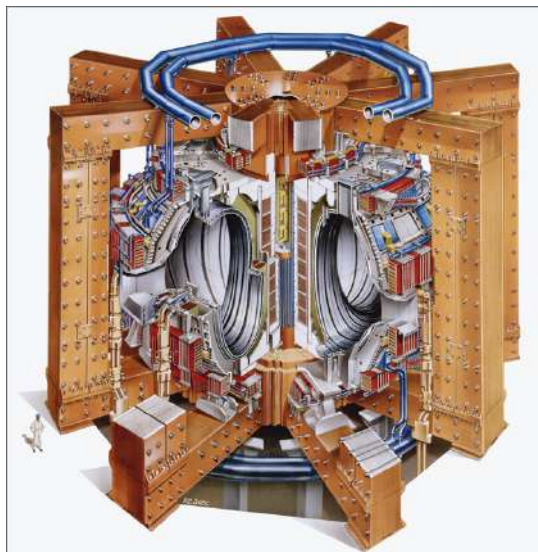


Fig. 1: Schematic representation of a fusion reactor using the Tokamak principle.

The joke has it that fusion reactors are always 20 to 30 years ahead and this has been suggested ever since the first experiments carried out in the UK in the late 1950's (see Afterthought July 2022, Issue 111).

As a reminder, Europe including Switzerland and the UK, in collaboration with five other countries, has decided to invest heavily in the tokamak fusion reactor which culminated in the so called ITER (International Experimental Thermonuclear Reactor) Fusion reactor currently being constructed at Saint Paul les Durance in Southern France. Although the prospect for fusion reactors to come on stream within the next decade is very remote there are, however, spin offs from current R&D on such large Fusion reactors that will assist certain areas. Possible examples are the following: