



Academic-industry knowledge transfer: translating fission expertise to fusion applications

Collaborators: UK Atomic Energy Authority, Royal Academy of Engineering

Members: University of Bristol, Nuclear AMRC

Challenge

Attracting research funding from a relatively small pool of organisations can be challenging. Therefore, gaining support from industry to address applied challenges provides researchers with significant opportunities.

Additionally, the relatively slow rate of innovation and new technology adoption in the nuclear industry means it is important to stimulate knowledge transfer between universities and industry at an early stage. The target of developing a commercial nuclear fusion reactor by 2040 requires the application of knowledge from nuclear fission, particularly in areas such as structural integrity and high temperature engineering.

Outcomes



UK Atomic
Energy
Authority



Royal Academy
of Engineering

Professor Mahmoud Mostafavi was awarded a Royal Academy of Engineering (RAEng) Senior Research Fellowship in High Temperature Fusion Engineering. This five-year position is co-sponsored by the UK Atomic Energy Authority, who are tasked with developing the world's first commercial fusion reactor by 2040. The funding focuses on an important challenge that sits between fusion and fission industry namely reliable joining of dissimilar metals.

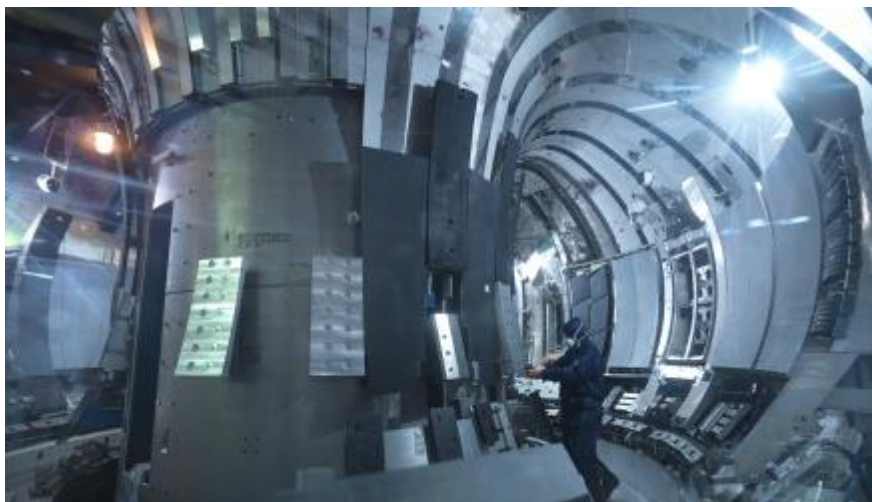


Image credits: EUROfusion



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**SOUTH WEST
NUCLEAR
HUB**

Supported by the Innovate UK Catapult Researchers in Residence programme, Dr Nicolas Larrosa of the University of Bristol is investigating additive manufacture for fusion applications in collaboration with the Nuclear Advanced Manufacturing Research Centre.

This work is supporting better understanding of the material properties of additively manufactured vanadium, particularly the mechanisms behind crack formation and propagation. This is aimed at allowing a more efficient reactor to be designed, reducing build costs & improving operations.

CATAPULT



NUCLEAR AMRC

"Working with the HVM Catapult gives me a widespread understanding of technology needs and how I can link structural integrity with manufacturing to add value to the final component. One of the main advantages of the Catapult is that it brings together academics like me and the final users. It's very applied research, and this gives us the opportunity to interact in a unique place. This research has also allowed me to attract more funding and engaging with other partners in related fields"

[Dr Nicolas Larrosa, Lecturer in Structural Integrity, University of Bristol](#)

How the Hub added value

The Hub is at the intersection between industry and academia, a place of advantage that can be used to link academics with industrial partners. The vast network of collaborators, industrial and academic, achieved through the hub network was a key enabler for the success of RAEng fellowship outlined above.

By supporting academics to apply for industrially linked fellowship applications, the Hub ensures research outputs are applied to live industrial challenges and are therefore have a greater impact in the sector.

This strategic view of the research portfolio gives academic, particularly early-career researchers, greater visibility of emerging research areas and Hub support for applications has been beneficial in attracting new funding sources and partners.



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