

# Press release: RACE to host €10m ITER test facility

The UK Atomic Energy Authority (UKAEA) and the ITER Organization have entered into a technical collaboration which will see the UKAEA's centre for Remote Applications in Challenging Environments, RACE, host the ITER Remote Handling Test Facility (IRTF) for a period of at least five years.

The UK Government is investing €5 million over this period, matched by the ITER Organization, to perform testing of critical remote handling operations necessary for the maintenance of components for ITER – the international fusion energy project based in Cadarache, France.

The IRTF will be used to test and evaluate remote handling system designs, conduct remote handling trials of generic and specific maintenance tasks and thus demonstrate the feasibility and compatibility of these remote handling tasks and to provide operational feedback into the final component designs. Test facilities will be established across many of the ITER systems, including Diagnostics, Heating, Vacuum and Port Plugs. UKAEA's RACE centre, at Culham Science Centre near Oxford, is actively supporting a number of industry-led partnerships developing remote maintenance systems for the ITER project, including the Divertor, Neutral Beam and the Cask & Plug Remote Handling System. Having this common link provides the opportunity for sharing best practice, creating common standards, sharing development effort and the development of generic test facilities.

UKAEA Head of Business Development, Martin Townsend, explained:

UKAEA remains committed to the realisation of ITER, helping to support industry to secure business from the ITER programme and partnering with all stakeholders to deliver the new technologies and processes necessary for success. Hosting the ITER remote handling test facility provides an excellent opportunity to link UKAEA's know-how with ITER Organization technical experts, supported by industry.

The ITER Organization's Division Head for Remote Handling & Radioactive Materials, Spencer Pitcher, summarised the win-win nature of the collaboration:

At the RACE centre, we now have access to an excellent new facility at a fusion laboratory dedicated to remote handling and staffed with expertise arising from long experience in performing such tasks on the JET fusion experiment. Meanwhile at ITER, we are in the midst of designing components that will require remote maintenance and for which validation of maintenance schemes by mock-ups can greatly reduce the risk to the ITER project. ITER

itself will not have facilities on our premises to perform such tests for several years. This UKAEA contribution to the success of fusion and ITER makes an excellent match with ITER's remote handling >mock-up and testing requirements.

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Notes to Editors

RACE (Remote Applications in Challenging Environments) Part of the UK Atomic Energy Authority, RACE is conducting R&D and commercial activities in the field of Robotics and Autonomous Systems. Based at Culham Science Centre near Oxford, RACE offers access to test facilities, robotic equipment and expertise for SMEs, multinationals, research laboratories and academia from sectors with 'challenging environments' such as nuclear fission and fusion, petrochemical, space exploration, construction and mining. Further information: <http://www.race.ukaea.uk>

United Kingdom Atomic Energy Authority The UK Atomic Energy Authority (UKAEA) carries out fusion energy research on behalf of the Government at Culham Science Centre. It is also developing Culham as a location of hi-tech research and business, with around 40 tenant companies now on site and UKAEA's new RACE robotics centre and Materials Research Facility, which both opened in 2016.

UKAEA's fusion lab Culham Centre for Fusion Energy oversees Britain's fusion programme, headed by the MAST Upgrade experiment. It also hosts the world's largest fusion research facility, JET (Joint European Torus), which it operates for European scientists under a contract with the European Commission.

ITER ITER ("The Way" in Latin) is one of the most ambitious energy projects in the world today. At Cadarache in southern France, 35 nations are working together to build the world's largest tokamak, a magnetic fusion device that has been designed to prove the feasibility of fusion as a large-scale and carbon-free source of energy based on the same principle that powers our Sun and stars. The work that will be carried out at ITER is crucial to advancing fusion science and preparing the way for the fusion power plants of tomorrow.

ITER will be the first fusion device to produce net energy. ITER will be the first fusion device to maintain fusion for long periods of time. And ITER will be the first fusion device to test the integrated technologies, materials, and physics regimes necessary for the commercial production of fusion-based electricity. The ITER Organization is an intergovernmental organization that was established by an international agreement signed in 2006. The Parties to the ITER Agreement (the ITER Members) are the People's Republic of China; the European Atomic Energy Community (Euratom); the Republic of India; Japan; the Republic of Korea; the Russian Federation; and

the United States of America. Further information: <https://www.iter.org/>

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## **News story: Review of methods for coffee bean authenticity testing**

### **Why is coffee authenticity an issue?**

Coffee is one of the most widely traded tropical products at a global level. Arabica and Robusta are the most popular varieties with Arabica generally favoured by discerning coffee drinkers. With a high market value and commercial importance coffee is in the top 10 products most at risk of food fraud. Fraud takes a variety of forms:

- adulteration of coffee with cheaper materials such as coffee husks, chicory, cereal grains, woody tissue, cocoa or soya beans, acai berries or exogenous sugars
- substitution of the more expensive Arabica with cheaper beans.

### **Where should you start analytically checking the coffee supply chain?**

This problem has been tackled by the Government Chemist's team at LGC and the Institute of Global Food Security in Queen's University Belfast. Distilling the results of a number of studies in scientific literature, Laura Tweed, Prof Duncan Thorburn Burns and Dr Michael Walker have produced key instructions for probing the authenticity of coffee.

#### **Common adulterants**

Most of the common adulterants can be detected by chromatography of marker carbohydrates as detailed in standard methods (BS ISO 24114 and BS 5752-15) with the help of chromatograms of authentic coffee/ adulterant mixtures. Looking at DNA with Real-Time PCR is a viable alternative to chemistry-based methods.

#### **Geographic origin**

Claims for specific coffee bean geographic origin can be checked by identification of discriminant molecular markers, although these are not as yet available for all coffee growing areas. A method using solvent extraction and Fourier Transform infrared spectroscopy, FTIR, has the advantage that the

FTIR spectra for authentic dichloromethane extracts are freely available online.

## Coffee bean species

Discrimination between Arabica and Robusta species in coffee samples is possible via the marker compounds kahweol and 16-O-cafestol, predominant in Robusta. Determination of the latter by nuclear magnetic resonance (NMR) spectroscopy has the advantage of speed and relative simplicity.

## Kopi Luwak

The most intriguing coffee authenticity problem is posed by Kopi Luwak, coffee beans harvested from the faeces of the palm civet cat. The processing of the beans in the digestive tract of this cat indigenous to Indonesia contributes to Kopi Luwak's mystique and price. Although proof of identity of Kopi Luwak has been made more difficult by the possibility of mimicking the effect of the cat's gut on beans through the use of microorganisms and enzymes, discriminant markers identified by gas chromatography combined with mass spectrometry (GC-MS) has proved successful. The question as to whether or not any residual civet cat DNA can be detected on ground roast coffee can be detected remains unanswered.

## The review

The [full paper](#) contains outline experimental details and references to the key studies so that any laboratory wishing to check coffee in the supply chain can make a good start.

## Reference

Thorburn Burns D, Tweed L & Walker MJ. Ground Roast Coffee: Review of Analytical Strategies to Estimate Geographic Origin, Species Authenticity and Adulteration by Dilution (2017) Food Anal Methods.  
DOI:[10.1007/s12161-016-0756-3](https://doi.org/10.1007/s12161-016-0756-3)

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## [Press release: Four NI charities for women and girls to receive UK Government funding](#)

Minister Kris Hopkins today visited one of the charities, Autism NI, which supports individuals with Autism and their families and campaigns to raise awareness of Autism within wider society. The other organisations benefiting from the new tranche of money are Mid Ulster Women's Aid, Foyle Women's Aid

and HomeStart North Down.

The news of final funding confirmation follows last week's announcement by the Secretary of State for Northern Ireland, the Rt. Hon. James Brokenshire MP, that four projects based in Northern Ireland were set to benefit from the Fund. The scheme is set up to help create a fairer, shared society for women across the United Kingdom.

At Autism NI's South Belfast base this morning at the start of Autism Awareness Month, Minister Hopkins donned a blue tie in support of the organisation's 'Wear It Blue' campaign which encourages supporters to wear blue clothing for the day to increase awareness of autism and fund-raise for the charity.

Minister Hopkins said:

"I am delighted to extend my congratulations to Autism NI on their success in the latest round of Tampon Tax funding – and indeed to all four local charities that will benefit from a total of £451,411. The money will support projects that will have a real and vital impact in improving the lives of disadvantaged women and girls throughout Northern Ireland.

"It has been truly inspiring to see first-hand the important work of Autism NI and its impact on the lives of individuals with autism and their families.

"Currently over 6,900 children are diagnosed with Autism in Northern Ireland and this number is increasing steadily. At a time when voluntary and community groups in Northern Ireland face concerns and challenges due to the current political situation, statistics like these – and the real lives of the people and families behind them – vividly underscore the importance of having devolved institutions up and running and serving the whole community."

Autism NI CEO Kerry Boyd added:

"I am delighted that the Tampon Tax Fund has supported such a significant project for the Autism community in Northern Ireland. Many girls with Autism are not diagnosed until later in life and therefore miss out on critical intervention support at an early age. This project aims to bridge that gap through tailored support for females living with Autism so they can fulfil their full potential in life and also give them a voice to advocate their own needs."

The money will help Autism NI remove barriers for Autistic girls within the home, school and community environments to support achievement, enjoyment and full participation in a society that respects their rights.

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# Press release: HS2 launches hunt for station designers and Euston development partner

The winning bidders will work with High Speed Two (HS2) Ltd to develop and refine the detailed plans for three brand new stations, at Birmingham Curzon Street, Birmingham Interchange and London's Old Oak Common, as well as a major expansion of London Euston.

The stations will welcome tens of thousands of passengers every day from all over the UK, providing easy and accessible onward connections to local transport, airports and connecting rail services as well as step-free access from street to seat. In total more than 170,000 new jobs are expected to be created in the wider development areas surrounding the four stations.

A separate contest, also launched today, will seek a Master Development Partner to advise on, and later take forward, development opportunities for new homes, offices and retail space above and around the revamped London Euston. The winner will work with HS2 Ltd, Network Rail, the station design contract winner and local authorities to deliver a unified plan to unlock the full potential of the area.

This comprehensive approach has the potential to deliver up to 21 hectares of development space as well as improving accessibility and creating new public and green spaces across the wider Euston site.

Welcoming the launch of the competition, Transport Minister Andrew Jones said:

The search for design teams to produce plans for new stations and world-class amenities for London Euston, Old Oak Common, Birmingham Interchange and Birmingham Curzon Street stations is a major step towards making HS2 a catalyst for growth across the country. The winning bidders will need to ensure the stations provide the best possible customer experience. There are also huge opportunities for development near all the HS2 stations. HS2 Ltd is progressing its search for a partner to deliver new homes, shops and offices around Euston station once the core HS2 work is complete.

HS2 Ltd Commercial Director Beth West said:

We're looking for the brightest and the best from across the industry to help us deliver one of the most tangible legacies of the HS2 project – three brand new stations and a major expansion of London Euston.

All four present unique challenges and opportunities for the winning bidders. Together we will deliver world-class designs that help unlock wider local regeneration opportunities and provide unparalleled levels of accessibility, ease and convenience for the travelling public.

Commenting on the development at Euston, HS2 Ltd Commercial Development Director Tom Venner said:

Euston has been the gateway to the nation and the nation's capital for over a century. HS2 provides the opportunity for it to continue that role into the next century – and for the local community to be proud of that role. Together with our development partner, we aim to redevelop Euston in a way that will make it not just the nation's hub, but London's as well, the heartbeat of both the nation and the capital, fit for the 21st century and beyond.

David Biggs, Managing Director, Network Rail Property said:

Network Rail welcomes the opportunity to create a new London destination at Euston mirroring its neighbour King's Cross and St Pancras where our investment in the station acted as a catalyst, bringing inward investment and regenerating the whole area into a thriving new London quarter.

The HS2 terminal at Euston will have a similar effect, it will become the initial focus for the wider regeneration of the station and surrounding area with an opportunity to create a new vibrant commercial and residential district in the heart of London with fantastic connectivity to the rest of the UK and Europe.

Bidders for the station designs and the Euston Master Development Partner are expected to be shortlisted in the summer, with contracts signed early next year. The station design work will be split into four packages.

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## **Press release: Minister Ellwood statement on death sentences in Gaza**

I strongly condemn the three death sentences carried out in Gaza on 6 April. This decision reflects a worrying trend of increasing use of the death penalty in Gaza.

It is the long-standing position of the UK to oppose the death penalty in all circumstances. We have repeatedly called for the de facto authorities in Gaza to respect the Palestinian Authority's moratorium on implementation of the death penalty.