

# NUCLEAR SECURITY SCIENCE NETWORK

## STFC Global Challenge Network+ in Nuclear Security Science “NuSec”

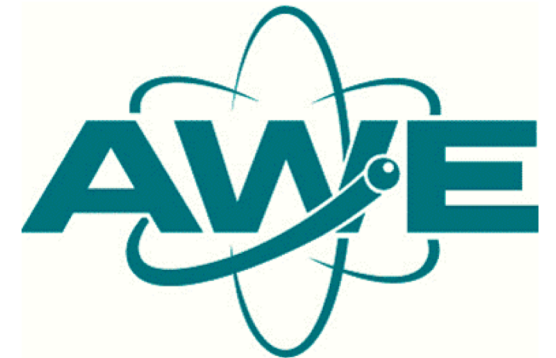
[www.nusec.uk](http://www.nusec.uk)



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**Science & Technology  
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## Aims

Develop collaboration between the **academic**, **industrial** and **defence** sectors in the area of nuclear security

## What

An STFC funded Network+ with a management group and End User Panel representing Government departments

## How

**PhD Studentships in Nuclear Security –**

**Challenge Meetings** – focussed smaller meetings to develop cross-disciplinary solutions to address end-user challenges: any suggestions?

**Student Pilot Projects** – small student summer projects to encourage new collaborative research. Can be with either Universities or Industry.

**Personal Development Grants** – for researchers who are either already active in nuclear Security, or wanting to develop work in this area

PhDs

## Nuclear Security Science PhD Studentships



We will fund up to 6 PhD Studentships @ 50%  
(maximum value of **£42,065** each)

*Detection  
systems for  
nuclear  
security*

*Algorithms, data  
and autonomous  
decision making*

*Alternative  
technologies for  
industrial use of  
radiation sources*

*Other innovative  
technologies for  
nuclear security  
applications*

Completed applications should be submitted to [info@nusec.uk](mailto:info@nusec.uk) by 17:00 on **Friday 1st November**

2019

1<sup>st</sup> Nov  
Deadline

2<sup>nd</sup> Dec  
Notification

Oct 2020  
PhD Start

Mar 2024  
PhD End

For further details: [www.nusec.uk/phd-studentships](http://www.nusec.uk/phd-studentships)



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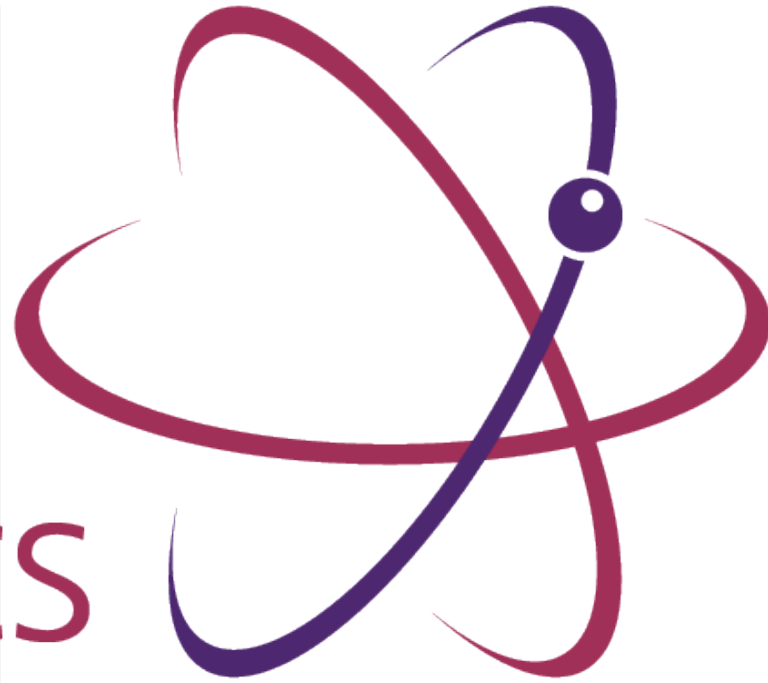
Further Information

**For more information about the  
NuSec PhD scholarships, or the network's  
program of events, please see:**

**[www.nusec.uk](http://www.nusec.uk)**



# NuFor Nuclear Forensics



*In partnership with:*



University of  
**BRISTOL**



**SOUTH WEST  
NUCLEAR HUB**

<http://nufor2019.iopconfs.org/>

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AWE

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# Overview



- NuFor is the UK's first dedicated forum aimed at bringing academia, industry and government together to share developments, successes and highlights in the field of Nuclear Forensics with a wider audience
- NuFor 2019 was held 9<sup>th</sup> – 11<sup>th</sup> July 2019, at University of Bristol in partnership with the Institute of Physics, South West Nuclear Hub and AWE
- Over 80 people came together for the inaugural conference from a range of backgrounds
- Keynotes included speakers from IAEA, US DOE, UK MOD & UK Metropolitan Police

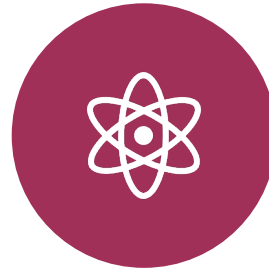
# Conference Objectives



Enhance the UK  
skill base and  
career pathways in  
nuclear forensics



Discuss the  
technical  
challenges in the  
field



Demonstrate the  
application of  
fundamental  
science in nuclear  
forensics



Provide a  
networking  
opportunity for  
technical  
specialists across  
different  
disciplines



Showcase research  
and new advances  
across academia  
and industry

# Topic Areas

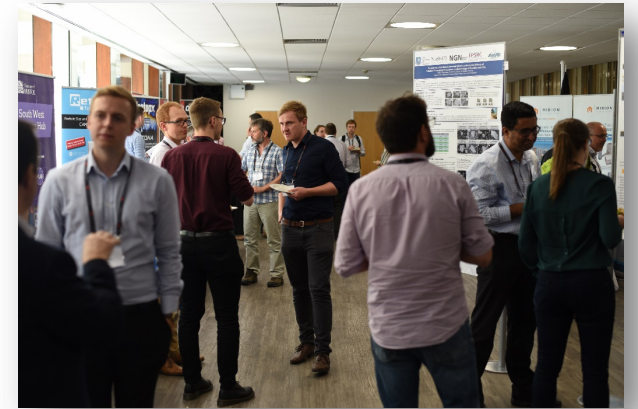




# Conference Format



- Two day conference, with keynote speakers and Nuclear Forensics technical presentations
- Associated poster presentation and trade exhibition
- Pre-registration event and evening poster and networking event after Day 1



# Keynote Speakers

- **Mr David Kenneth Smith – IAEA**
  - ‘Ensuring Nuclear Forensics’
- **Professor Robin Grimes – Imperial College, London**
  - ‘Remarks from the Chief Scientific Adviser’
- **Dr Mansie Iyer – Department of Energy, USA**
  - ‘Nuclear Forensics and International Engagement – The Nuclear Smuggling Detection & Deterrence (NSDD) Perspective’
- **Mr John Simm – UK Metropolitan Police**
  - ‘Investigations and forensics science support to a nuclear security event’



# Contributed Content

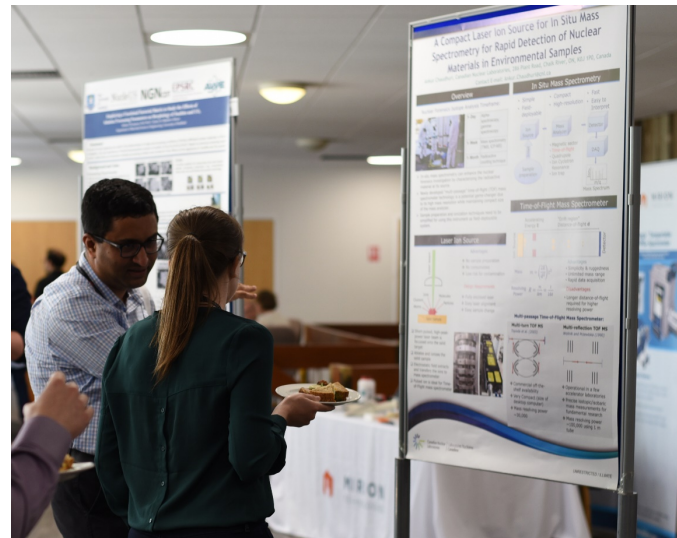
Wide range of technical content, including:



Dr David Richards, U. of Bristol;  
'Environmental nuclear forensics applied to  
Fukushima fallout: From bulk environmental  
samples to individual particles'  
*Environmental*

Travis Tenner, LANL;  
'Isotope Analysis of Particles by SIMS for  
Nuclear Forensics: Analogues and  
Applications'  
*Analytical Techniques*

Nathan Thompson, U. of Sheffield;  
'Effects of Aqueous Processing Conditions  
and Thermal Decomposition on Forensic  
Signatures of Uranyl Oxalate'  
*Materials & Processing*



Ankur Chaudhuri, CNL;  
'A Compact Laser Ion Source for In Situ Mass  
Spectrometry for Rapid Detection of Nuclear  
Materials in Environmental Samples'  
**NuFor 2019 Poster Winner**

Dr Matt Higginson, AWE;  
'Application of plutonium age dating to  
samples of known provenance'  
*Radiochemistry*

Enrica Balboni, LLNL;  
'Don't Believe Everything You Think:  
Investigating Forensic Signatures Materials  
from Early in the Uranium Fuel Cycle'  
*Data Analysis & Statistics*

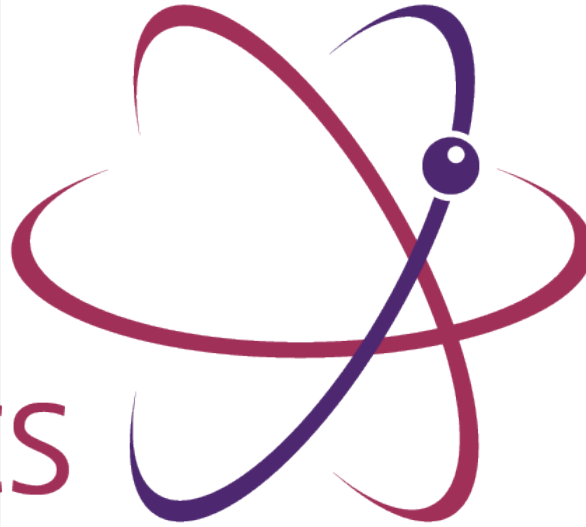
Dr Luther McDonald, U. of Utah;  
'Morphological Analysis of Uranium Oxides'  
*Analytical Techniques*

# Overall Outcomes

- NuFor 2019 was a success – over 80 people attended the inaugural conference in July 2019
- 38 pieces of contributed content were presented across 10 sessions, including a poster session
- Attendees from 34 companies and institutions covering various different academic fields came together to share and network, many meeting for the first time
- Feedback from delegates, presenters and sponsors has been extremely positive – a follow-up conference has been agreed for 2020



# NuFor Nuclear Forensics



*Save the Date!*

**13<sup>th</sup> – 15<sup>th</sup> October 2020**

*Hosted at the Institute of Physics, London*

[nufor2020.iopconfs.org](http://nufor2020.iopconfs.org)

*In partnership with:*



*Sponsorship  
opportunities available:  
Contact **IOP Events Team***