

# Dr Ali Hussain

[ali.hussain@stfc.ac.uk](mailto:ali.hussain@stfc.ac.uk)

**Location:** Oxford

Tel: 01235446582 (work) | 07841107268 (mobile). <https://www.linkedin.com/in/ali-h-23a58720/>

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I have successfully delivered complex technical projects in the space industry. With a strong background in experimental physics, I've worked on many collaborative projects ranging from feasibility studies (TRL0) to laboratory based new instrument development and field deployment (TRL6). I am qualified in PRINCE2 and use my skills to manage several projects simultaneously and deliverables on time. I am competent in MATLAB, LabVIEW, Optics Lab and currently completing a course on Python.

## Projects awarded funding for – complete at work

- GHG point source monitor CubeSat using imaging Fourier Transform Spectrometer [CEOI]
  - Integrating remote sensing and ground-based spectral analysis to investigate biodiversity of archaeological sites in Amazonia [GCRF]
  - Spatial Heterodyne Static Fourier Transform Spectroscopy [CfI]
  - Resilient Application of Intelligent Disaster Management [Newton]
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## Engagements

### **Research Scientist**

EOASD, RAL Space, STFC, Harwell

Jun 2011- present

- Completing the development of a portable prototype deep UV static Fourier Transform spectrometer for measuring dissolved organic carbon in natural water resources. This project is in collaboration with CEH University of Lancaster and funded by NERC and STFC.
- Theoretical development of a hyperspectral high resolution thermal infrared imager (HHRTII) for satellite missions for global remote sensing applications. This project is in collaboration with the University of Leicester and funded by CEOI.
- Spectroscopy experimentalist for pilot study using VIS-NIR leaf reflectance for plant species discrimination in the Amazonia for biodiversity changes due to deforestation. This project is in collaboration with University of St Andrews and Kew Gardens and funded by GCRF.
- Developed a prototype instrument that uses tuneable laser absorption spectroscopy to measure CO<sub>2</sub> gas isotopes concentrations, this gave rise to spin-off MIRICO.  
([http://www.esa.int/Our\\_Activities/Space\\_Engineering\\_Technology/TTP2/Honey\\_are\\_you\\_for\\_real](http://www.esa.int/Our_Activities/Space_Engineering_Technology/TTP2/Honey_are_you_for_real))

### **On-call Firefighter,**

**Oxfordshire Fire and Rescue Service, Oxford**

Oct 2011 – present

- As a competent firefighter, I respond to distress calls, delivering fire safety promotional activities, assisting with security prevention strategies, and training new crew members.

### **Research Officer**

Department of Physics, University of Bath, Bath

Feb-Jun 2011

- Developed and designed a TD THz circular dichroism (CD) spectrometer to study artificial chiral structures exhibiting large CD, fabricated sources and detectors, and supervised PhD students.

### **Postdoctoral Fellow**

Ultrafast Optical Spectroscopy, KAUST, Saudi Arabia

2009-2011

- Developed simulations for optical setups for multi-beam high temporal/spatial resolution spectroscopy from DUV to NIR for different semiconductors and electro-optic materials.

### **Project Engineer**

Space and Scientific Imaging CCD, E2V Technologies, Chelmsford

2008-2009

- Responsible for working on several key development projects which succeeded, define requirements test and calibrate new devices, and writing proposals on R&D projects.

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## **Academic Achievements**

- **PhD in Ultrafast Physics** (2001 – 2006): Department of Physics, University of Bath, Bath, U.K. Thesis Title “Ultrabroadband Time-Domain Terahertz Spectroscopy”
- **MPhys in Physics with Laser Science** (1997 – 2001): Department of Physics, University of Southampton, Southampton, U.K. 2:1 Honors
- **I.B. International Baccalaureate Bilingual Diploma** (1994 – 1997): Hvitfeldska Gymnasiet, Gothenburg, Sweden. Extended essay “Principles and applications of Lasers”.

### **Journal Publications:**

- High dynamic range, hyper-terahertz detection with silicon photoconductors: A.C. Muir, A. Hussain, and S. R. Andrews. Applied Physics Letters, 108, 241102-1-5 (2016)
- Absence of phase-dependent noise in time domain reflectivity studies of impulsively excited phonons: A. Hussain and S. R. Andrews. Physical Review B, 81, 224304-1-4 (2010)
- Improving radiation tolerance in e2v CCD sensors: D. Burt, J. Endicott, P. Jerram, P. Pool, D. Morris, A. Hussain, P. Ezra. Proceedings of the SPIE, 7439, 743902-10 (2009)
- Ultra-broadband polarisation analysis of terahertz pulses. A. Hussain and S. R. Andrews. Optics Express, 16, 7251-7 (2008)
- Dynamic range of ultrabroadband photoconducting antennas: A. Hussain and S. R. Andrews. Applied Physics Letters, 88, 143514-1-3 (2006)
- Optimization of photoconducting receivers for THz spectroscopy: S. R. Andrews, A. Armitage, P. G. Huggard, A. Hussain. Physics in Medicine and Biology, 47, 3705-10 (2002)

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**Affiliations:** MInstP, Member of the Institute of Physics, ID Number: **1062821**

**Languages:** Fluency in English, Arabic, and Swedish

**Sports and Hobbies:** Keen basketball player, cyclist (mountain and road), MTB trials, free running, weight training, swimming, and running.