

**OXFORD SIGMA JOB DESCRIPTION**

01 March 2023

<b>JOB TITLE:</b>	Materials Engineer (Intern)
<b>JOB LOCATION:</b>	Harwell Science & Innovation Campus, Oxfordshire, UK
<b>HOURS:</b>	Full-time (37.5 hours per week)
<b>SALARY:</b>	£19,500 pro rata
<b>DATES</b>	Starts July 2023 (8-week placement)
<b>JOB REFERENCE:</b>	OS-JA-INTERN-03

**1. COMPANY DESCRIPTION**

**About Oxford Sigma (OS):** Oxford Sigma is a research and technology development company that seeks out novel and innovative nuclear solutions that could have the potential to become disruptive technologies to significantly change the course of the world’s clean energy future. OS has wide expertise in fusion energy, advanced-fission, and nuclear space systems. OS has innovative patent pending technology in fusion components, materials and technology, with the aim of enabling the commercialisation of fusion and advanced fission energy. OS stands out among nuclear and scientific engineering companies as it is a small company owned and operated by scientists and engineers. The company roots are within Oxfordshire with its headquarters at Harwell Campus.

In addition to OS technology development, the company has established itself as a highly respected technical service supplier for the fusion energy market, both within the private and public sector. OS has become part of the emerging supply chain ecosystem within the UK, USA and globally for fusion energy. The company supports various national laboratories (USA, UK), governments, regulators, design companies (fusion and fission), and provides technical expertise on the Engineering Delivery Partnership for the UK Atomic Energy Authority’s (UKAEA) flagship Spherical Tokamak for Energy Production (STEP) programme, the Office for Nuclear Regulation’s Technical Support Framework, and other frameworks including the UKAEA Tritium Engineering Framework. In the private sector Oxford Sigma works extensively in materials strategy, materials R&D and fusion reactor design.

The company is a member of the [Fusion Industry Association \(FIA\)](#), a registered non-profit organisation composed of private companies working to commercialise fusion power, the UK [Fusion Cluster](#) which hosts a collection of UK fusion companies striving for commercialisation, and is a contributing member to the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code nuclear design code committees.

**2. PROJECT DESCRIPTION**

This project will be embedded in Oxford Sigma’s materials and manufacturing team, working on the development of fusion materials, and enabling technology to assist in the commercialisation of fusion energy.

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Often the specific materials have individual requirements in their processing from raw material to finished components that are unusual or particularly challenging (for example, tungsten which cannot be melt processed). This project seeks to take the existing literature and condense the knowledge to a handbook form addressing the materials processing, and thus manufacturing, and manufacturability.

The handbook will address a growing need for ease of access to knowledge on what can and cannot be done in component manufacture to aid engineers and physicists involved in the design of components for fusion. The handbook will need to present complex materials phenomena to a technical, non-specialist audience and will focus on the use of graphical design to improve accessibility of what is otherwise the domain of niche expertise.

The candidate responsibilities will include:

- Being embedded into the Oxford Sigma materials and manufacturing team, being exposed to a range of projects.
- Forming a fusion materials palette, researching and identifying the key materials processing requirements of each material, and identifying their interactions with one another according to common component requirements.
- Creating a structured breakdown of the materials by their applicability and importance in a reactor and scoping different visual approaches to present their findings.
- Presenting the results to the Oxford Sigma team at the conclusion of the project. Identifying further work required to take the handbook through to publishing.
- Developing a visually appealing handbook consolidating the information found, with the assistance of Oxford Sigma's materials and manufacture team.

### **3. ELIGIBILITY**

The candidate must have the right to work in the UK and able to work from Oxford Sigma's Harwell Campus in Oxfordshire.

The candidate must be an Undergraduate, Postgraduate or PhD student who is still classified by their university as a student at time of placement start.

### **4. QUALIFICATIONS/EXPERIENCE**

Suitable for students studying a range of STEM subjects, however, a materials science, engineering background or sharp interest would be advantageous.

The candidate will have the following qualifications/experience:

- Strong academic background.
- Working understanding of materials.
- Knowledge of a range of manufacturing techniques.
- Strong communicator of technical concepts.
- Excellent verbal and written communication and presentation skills.
- Intuitive and creative problem solving.

Advantageous qualifications/experience:

- Experience with graphical design and/or UX

## 5. ADDITIONAL INFORMATION

OS is a dynamic, fast-paced, and exciting company that is working on some of the world's most technically challenging endeavours, such as fusion and advanced fission energy. The company is based at the world-leading science business park, Harwell Science and Innovation Campus in Oxfordshire, which provides a rich, engaging environment with fellow similar highly technical companies who work in the space, health, and energy sectors.

The candidate must have the right to work in the UK and able to travel to the UK office.

The benefits that OS provides include:

- 28 days paid annual leave pro rata.
- Workplace pension scheme.
- We support employees if they want to be (or are) part of the military reserves.

OS is expanding its technical team and is looking to recruit a Fusion Engineer Intern for summer 2023. This is an exciting time for OS as the company is expanding the core business practice into developing patent pending technology for solutions that could accelerate the commercialisation of fusion energy.

This internship is in collaboration with the UKAEA through the Fusion Industry Programme (FIP). The FIP targets the third pillar of the UK's Fusion Strategy, which is "commercial leadership via thriving private-sector innovation and technology transfer". A key element to achieving this is to attract and retain a diverse range of talented people working within the fusion industry. The FIP includes an Education Scheme which aims to increase the supply of highly skilled students and researchers into the sector.



UK Atomic  
Energy  
Authority

This internship position at Oxford Sigma plans to be part of the Summer Placement Scheme and it will enable students to undertake paid placements within host organisations related to the fusion industry.

## 6. APPLICATION

Send [internships@oxfordsigma.com](mailto:internships@oxfordsigma.com) an email with the Job Reference number (OS-JA-INTERN-03) in the subject line, which contains your CV and cover letter.

The application deadline is **17:00 Friday 14<sup>th</sup> April 2023**.