**Job Title:** Research Associate in Applied Radiation Spectroscopy (AIRS-NFM)  
**Present Grade:** 7

<table>
<thead>
<tr>
<th>Department/College:</th>
<th>Engineering</th>
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<tbody>
<tr>
<td>Directly responsible to:</td>
<td>Professor Malcolm Joyce</td>
</tr>
<tr>
<td>Supervisory responsibility for:</td>
<td>Some supervision of postgraduate students</td>
</tr>
</tbody>
</table>

**Other contacts**

**Internal:**  
Prof. James Taylor, Dr Xiandong Ma (both Engineering)

**External:**  
Prof. Stephen Marshall and Dr Paul Murray (University of Strathclyde); experts at Westinghouse Springfields Fuels Ltd., Mirion Technologies and the National Nuclear Laboratory.

**Major Duties:**

1. Improving and advancing our scientific understanding of whether in-situ methods of materials characterization and quantification, associated with the production of nuclear fuel, can be used to render the process responsive to change. For example, in this specific context, whether γ-ray spectrometry can be used to determine enrichment, in real time and in-process, and thus can be used to adjust the process in the event a departure from the required specification arises.

2. Applying and developing new models and metrology procedures with which to infer materials properties of relevance to rendering nuclear fuel production responsive to change, building on existing prior art.

3. The design and delivery of models and subsequently experiments in the laboratory which can then be piloted in-factory and be used to establish parameters to control the manufacturing process.

4. Participation in AIRS-NFM project meetings, including the preparation and presentation of talks, posters and reports, and material for the website associated with the project, to disseminate the results of these studies.

5. Participation in national and international conferences and workshops to present the results of the project to a wider audience and to learn about current advances in the field.

6. Preparation of journal papers for publication of project findings.

7. Participation in (and ultimately taking the lead in) writing new research proposals that build on the expertise in radiation/robotics research developed in this project.