

**JOB DESCRIPTION**

Senior Research Associate – Molecular Electronics for Next-Generation Memristors

**Ref:** 0314-25

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| **Job Title:** Senior Research Associate | **Present Grade:** 7 |
| **Department/College:** Physics | |
| **Directly responsible to:** Professor Benjamin Robinson | |
| **Supervisory responsibility for:** Co-supervision of PhD students and UG projects | |
| **Other contacts** | |
| **Internal:** Collaborating with academic staff, PDRAs and postgraduate students in the experimental condensed matter physics group of Dr Samuel Jarvis and the theory group of Professor Colin Lambert | |
| **External:** Collaborators from EPSRC-funded MemOD project at the Universities of Cambridge and Durham. | |
| This post is part of the £2.1M EPSRC funded project Memristive Organometallic Devices formed from Self-Assembled Multilayers (MemOD). The project is a collaboration between the Universities of Lancaster, Cambridge and Durham. The aim of MemOD is to realise high-performance memory elements using self-assembled molecular layers for next generation devices for AI.  **Major Duties:**  The assembly and characterisation of ultra-thin films of organic and organometallic materials with tailored electrical and thermal transport properties using a range of scanning probe microscopy (SPM) techniques.  **In particular, the post holder will be expected to:-**   1. Play a leading role in development of an organic and organometallic memristors. 2. Take an active role in delivery and management of the EPSRC-funded MemOD project to ensure that the project objectives are achieved according to schedule. 3. Collaborate with colleagues working on theory (Lancaster), chemical synthesis (Durham) and device fabrication (Cambridge). 4. Deposit, by molecular self-assembly, a range of tailored organic / organometallic ultra-thin films. 5. Characterise these thin films using a range of microscopy, spectroscopy and surface electrochemical techniques. 6. Identify memristive switching and relate the mechanism to the nanoscale electrical transport in organic/organometallic materials 7. Analyse measurement results and present them within the project team at Lancaster, to MemOD collaborators in other universities, and at conferences. 8. Write technical documents to capture results and publish papers in peer-reviewed journals. 9. Generally, with support from your line manager, help with the running of the research group, including: supervision of new/junior members of the group and UG/PG students; and participating in outreach for schools, visitors and the public; and such other activities as may be directed by the PI. | |