

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF SCIENCE & ENGINEERING
SCHOOL OF NATURAL SCIENCES
DEPARTMENT OF MATERIALS

RESEARCH ASSOCIATE IN NANOMIP CHARACTERISATION AND POLYMER ANALYTICS

VACANCY REF: SAE-028660

Salary:	Grade 6 £37,174 to £45,413 per annum, depending on relevant experience
Hours:	Full time (1 FTE)
Duration:	Fixed term for 18 months
Location:	Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

Name: Dr Tom McDonald - Reader in Sustainable Materials

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Background

We are recruiting a postdoctoral research associate (PDRA) to work on the EPSRC-funded project AF4-MIP: Advancing AF4 for Precision Characterisation of Molecularly Imprinted Polymer Nanoparticles, a collaboration between Dr Tom McDonald at the University of Manchester and Prof Nick Turner at the University of Sheffield.

The goal of this 18-month project is to develop asymmetric flow field-flow fractionation (AF4) into a robust platform for the high-resolution characterisation of nanoscale molecularly imprinted nanoparticles (nanoMIPs) and their interactions with biological targets such as proteins and extracellular vesicles. The project will leverage cutting-edge instrumentation and expertise at the Henry Royce Institute, with nanoMIP synthesis carried out at Sheffield. Detailed analytical work will be conducted in both Manchester and Sheffield.

The successful candidate will work closely with interdisciplinary collaborators to optimise AF4 protocols, benchmark against other analytical methods, and correlate polymer synthesis parameters with functional behaviour. There will be regular funded travel to Sheffield and opportunities to engage with industrial partners.

The range of duties will include

- Optimise and apply AF4 for the separation and characterisation of nanoMIPs
- Conduct analytical method development, including use of MALS, DLS, RI, UV-Vis and fluorescence detection
- Benchmark AF4 performance against techniques including DLS, TEM, SEC, and NMR
- Support interaction studies between nanoMIPs and biological targets, using both AF4 and surface plasmon resonance (SPR)
- Collaborate closely with the University of Sheffield and industrial partner PostNova Analytics
- Contribute to publication of high-quality journal articles and dissemination at national and international conferences
- Participate in a knowledge-sharing workshop aimed at academic and industrial stakeholders
- Assist in supervision of student projects at both universities and contribute to laboratory training where appropriate

Person Specification

Essential

- A PhD (or equivalent) in polymer chemistry, materials science, analytical chemistry or a related discipline
- Proven expertise in polymer synthesis and characterisation
- Hands-on experience with particle or colloid characterisation techniques (e.g., DLS, MALS, SEC, AF4)
- Strong analytical skills, including method development and data interpretation
- Excellent communication skills with a proven ability to produce high-quality written outputs (reports, presentations and manuscripts)
- Ability to work independently and collaboratively across institutions
- Willingness and capability to travel between the partner institutions

Desirable

- Direct experience with asymmetric flow field-flow fractionation (AF4)
- Knowledge of molecularly imprinted polymers (MIPs) or colloidal materials
- Experience with fluorescence and/or surface interaction techniques (e.g. SPR)