



KTP Associate (Polymer Processing Engineer) - Fixed Term

Job Summary

We are seeking an ambitious engineer to join Robert Gordon University (RGU) as a Knowledge Transfer Partnership (KTP) Associate. This full-time, fixed-term 27-month project, delivered in collaboration with Scotmas Group Limited and co-funded by Innovate UK, will establish a pilot-scale microporous membrane extrusion capability to manufacture dual-layer, catalyst-embedded membranes for an on-demand chlorine dioxide (ClO₂) membrane reactor/generator. The post is based primarily at Scotmas premises in Kelso, Scottish Borders, with regular engagement at RGU.

Scotmas www.scotmas.com is a Scottish technology business delivering chemical and process solutions for industrial customers. Through this KTP project with RGU, Scotmas is investing in new manufacturing and testing capability to expand its product portfolio and enable rapid, high-yield and high-purity ClO₂ generation.

The KTP Associate will lead the design, specification, sourcing and commissioning of the extrusion pilot line, translate prior project data into manufacturing specifications, and run optimisation and validation trials. The role offers extensive practical and formal training, mentoring from industrial and academic supervisors, and a £4,500 personal development budget. There may also be opportunities to publish results with the project team.

Applicants should have strong knowledge of polymer processing and extrusion, with an interest in hands-on machine build, commissioning and troubleshooting. Experience with microporous membrane manufacture, paste/ram extrusion or related processing is desirable.

Excellent communication and interpersonal skills are required. You will work with technical, academic and business stakeholders, so teamwork, flexibility and a proactive approach are essential.

Salary Range: £35,000 - £40,000 per annum, plus £4,500 personal development budget

Informal enquiries may be sent to: Nicola Palmer (Company Supervisor, Scotmas) nicolap@scotmas.com and Dr Ketan Pancholi (Academic Supervisor, RGU) k.pancholi2@rgu.ac.uk

As per the UKVI immigration rules, this role may be eligible for sponsorship under the Skilled Worker route. Sponsorship under this route is dependent on factors specific to the applicant and if tradeable points can be used under the rules. For KTP's we will also consider eligibility under the Global Talent Visa route.

Job Description

RESPONSIBLE TO: Whilst working on company premises: report to and take direction from Nicola Palmer (Company Supervisor). Whilst working at Robert Gordon University: report to and take direction from Dr Ketan Pancholi (Academic Supervisor).

RESPONSIBLE FOR: No supervisory responsibilities

PURPOSE OF POST: To lead the design, specification, sourcing components and building of a microporous membrane extrusion pilot line that can reliably manufacture dual-layer, catalyst-embedded membranes with the required physical properties for an on-demand ClO₂ membrane reactor generator. The Associate will use data and learning from previous work and embed RGU know-how into a repeatable, scalable manufacturing process with appropriate monitoring, safety and documentation to enable future commercialisation.

PRINCIPAL DUTIES:

- Deliver the project objectives as detailed in the KTP project workplan.
 - Use data from prior project work to define membrane performance targets (pore structure, thickness, permeability, mechanical strength, catalyst loading/retention) and translate them into manufacturing specifications.
 - Lead the conceptual and detailed design of a pilot-scale microporous membrane extrusion line, including process calculations (throughput, pressure/temperature window, die design, residence time, drying/sintering/curing requirements).
 - Specify, source and integrate key subsystems (feed/mixing, paste extruder, die/tooling, heating/cooling, take-up, inline thickness/weight measurement, safety interlocks), working with suppliers and workshops.

- Develop and optimise the membrane formulation and extrusion parameters to achieve consistent microporosity and embed/secure the catalyst layer without loss or degradation.
 - Plan and execute test and validation trials (DoE where appropriate), including membrane characterisation (porosity/PSD, permeability, tensile properties, thickness uniformity, catalyst distribution and leaching) and process capability assessment.
 - Implement digital monitoring and control (instrumentation, data logging, control limits) to ensure safe, repeatable manufacture and to support scale-up decisions.
- Produce robust SOPs, risk assessments, and technical documentation, and transfer knowledge/training to ensure the capability is embedded for post-project operation and future commercialisation.
 - Maintain an up-to-date project plan and provide regular progress reports.
 - Deliver presentations to immediate project team members and other stakeholders.
 - Any other duties that may be reasonably assigned by the Academic Supervisor and Company Supervisory teams.

Person Specification

ESSENTIAL REQUIREMENTS

Qualifications and Professional Membership:

MSc/MEng in manufacturing, materials, chemical or mechanical engineering

Knowledge & Skills:

- Viscous polymer paste flow modelling (CFD) and calculations, pump/pipe sizing, and experimental design (DoE).
- Extruder operation & set-up: start-up/shut-down, safe isolation, purging, screw/barrel assembly, heater/zone control, and routine troubleshooting.
- Process window development: establish stable ranges for screw speed, throughput, barrel temps, die temps, back pressure, melt temperature, and line speed.
- Melt quality control: recognise and correct melt fracture, sharkskin, surging, die drool, gels/contamination, voids, bubbles, and poor dispersion.

- Hands-on paste (ram) extrusion for microporous membrane precursors: die selection/alignment, extrusion ratio control, steady pressure/ram-speed operation OR polymer processing or membrane preparation. Powder plus lubricant/binder formulation for porosity control: consistent mixing/maturation, additive dispersion, moisture/contamination control.
- Pore-structure/process optimisation: tune lubricant level, shear history, and conditioning to achieve target pore size/porosity/permeability while avoiding cracking, tearing, lamination, and density gradients.
- Post-processing to create porosity: controlled drying/de-lubrication and thermal treatment (as applicable), managing shrinkage and pore collapse.

Experience:

- Working with chemicals and strong awareness of EHS requirements.
- Self-motivated with an ability to work independently and to tight deadlines within a dynamic and small team environment.
- Safety-conscious, detail-oriented, problem solver and hands-on.
- A resilient self-starter with strong communication skills across multidisciplinary teams and a drive for innovation.
- An ability to undertake independent research and development analysis
- Willingness and ability to learn quickly.
- Team working and flexibility.

DESIRABLE REQUIREMENTS

Qualifications and Professional Membership:

- PhD in polymer processing, manufacturing, materials, chemical or mechanical engineering, with a strong foundation in polymer rheology, membrane processing and paste extrusion.

Knowledge & Skills:

- Membrane QC & characterisation: thickness/areal weight, bubble point, air permeability/flow, porosity/PSD (e.g., capillary flow porometry), and mechanical integrity testing, with robust SOPs and trial records.
- Experienced in metrology (SEM/EDS, porosimetry, DSC, tensile testing) and safe chemical handling under EHS/ATEX protocols.
- Competent in data analysis (Excel, Python, Minitab) and technical documentation.

- Proficient in lab-to-pilot scale-up for membrane extrusion, including piping/connectors, pressure rating, blockage mitigation, SOPs, IQ-OQ-PQ and SPC.
- Evidence of delivering hands-on engineering projects from concept through to commissioning.

Experience:

- Comfortable working across sites (company and university) and engaging suppliers and stakeholders.

Salary: 35000.00 - 40000.00 GBP per Year

Position Type: Full Time , Fixed Term 27 Month 40.0 Hours per Week