UNIVERSITY OF WARWICK

Job Description

Job title	Marie Curie Early Stage Researcher
Department	Chemistry
Grade	Marie Curie Scale

Job purpose (a brief summary of the role)	To carry out doctoral research on the synthesis, characterisation and performance testing of well-defined polymers for electric vehicles (DC3: poly(2-oxazoline) copolymers as lubricant additives; DC11: poly(vinyl pyrrolidone)-based block copolymer binders for battery cathodes) in the Becer Group, as part of the Marie Skłodowska-Curie Doctoral Network POLY4EV, and to complete a PhD degree at the University of Warwick within 36 months while taking part in the network's training and secondments.
Duties and responsibilities	1. Plan and carry out an independent research project in line with the POLY4EV work plan (DC3: oil-soluble poly(2-oxazoline) copolymers for EV lubricants; DC11: poly(vinyl pyrrolidone)-based block copolymer binders for EV batteries). 2. Synthesise and purify monomers and polymers using controlled and living polymerisation methods, including under air- and moisture-free conditions where required, and build libraries of polymers with different composition and topology. 3. Characterise the polymers (e.g. NMR, size exclusion chromatography, mass spectrometry, thermal analysis) and relate their structure to solution behaviour, lubricant performance (DC3) or electrode and cell performance (DC11), working with network partners. 4. Prepare formulations (lubricant blends or electrode slurries) and take part in performance testing, including coin cell assembly and testing for DC11. 5. Keep accurate research records, analyse and interpret results, and manage research data according to good research practice and the network's data management plan. 6. Write up the research for publication in open-access peer-reviewed journals and present results at conferences and network events. 7. Complete the PhD programme at Warwick, including regular supervisory meetings, progress reviews and the submission of a doctoral thesis within the funded period. 8. Take part in the network's training programme, workshops and outreach activities, and undertake two three-month secondments with network partners abroad, one of them in industry. 9. Follow health and safety and laboratory rules and contribute to a safe, inclusive and well-organised laboratory environment in the Becer Group. 10. Always act with professionalism, show respect to colleagues and understand and adhere to the University's Dignity Principles. Work collegially and support all teams you engage with in order to help achieve the University's objectives. 11. Any other duties commensurate with the grade and level of responsibility of this post, for which the post holder has the necessary experience and/or training.

Person Specification

The Person Specification focuses on the essential and desirable knowledge, skills, experience and qualifications required to undertake the role effectively. This is measured by (a) Application Form, (b) Test/Exercise, (c) Interview, (d) Presentation.

Essential Criterion No.	Essential Criterion Description	Measured by
E1	Master's degree (or a UK 2:1 or equivalent undergraduate degree plus relevant research experience) in Chemistry, Polymer Science or a closely related subject.	A
E2	Excellent training in organic chemistry, including synthetic laboratory skills such as handling air- and moisture-sensitive reagents and purifying and characterising organic compounds.	A & C
E3	Knowledge of polymer chemistry, including the principles of polymerisation and the relationship between polymer structure and properties.	A & C
E4	Interest in sustainable materials and in their application in energy or transport technologies.	A & C
E5	Eligible as an MSCA Doctoral Candidate: not yet awarded a doctoral degree.	A
E6	Compliance with the MSCA mobility rule: not resided or carried out main activity in the UK for more than 12 months in the 3 years immediately before the appointment date.	A
E7	Able to meet the University of Warwick's admissions requirements for a PhD in Chemistry.	A
E8	Good written and spoken English (IELTS 6.5 or equivalent, or a clear plan with dates to obtain it).	A & C
E9	Ability to plan and carry out experiments safely, to work independently and to think critically about results.	A & C
E10	Willingness to undertake secondments with academic and industrial partners abroad and to take part in network training events.	A & C
E11	An ability to work collaboratively and effectively with academic and administrative colleagues, and with colleagues outside the University to promote collegiality.	A & C

Desirable Criterion No.	Desirable Criterion Description	*Measured by*
D1	Hands-on experience of controlled or living polymerisation (e.g. cationic ring-opening polymerisation of 2-oxazolines, RAFT) or of monomer synthesis.	A & C
D2	Experience with polymer characterisation techniques such as NMR, SEC/GPC, mass spectrometry, DSC/TGA or rheology.	A & C
D3	Knowledge of polymer additives, lubricants, battery materials or electrode processing.	A & C
D4	Experience of collaborative or interdisciplinary research, including with industry, and research outputs such as a thesis, presentation or publication.	A & C