

Publication date: 9 October 2026

Application deadline: 30 October 2026

Ref. 27/010

Project and/or research field: WIDE project – Process and Systems Monitoring

Area: Advanced Materials for Energy Applications

Department: Solar Energy Materials and Systems (SEMS)

Department leader: Prof. Alejandro Pérez Rodríguez

‘R2 – Postdoctoral Researcher in the Process and Systems Monitoring Group’

Description:

The Process and Systems Monitoring Group of the Solar Energy Materials and Systems (SEMS) Department focuses on the development of specialized equipment for research and monitoring of materials and process conditions. We are seeking a candidate with a PhD to carry out research activities within the WIDE project (Wide-bandgap materials for Integrated Development of Green Energy systems), which focuses on kesterite-based thin-film photovoltaic technologies. Specifically, the candidate will perform activities related to the development of laboratory automation and the management of the associated data. Accordingly, the candidate should be able to develop laboratory equipment, develop automation algorithms and validation tests, and contribute to reporting, dissemination, and training activities.

Main responsibilities:

Research and development activities:

- Lead the development of automated laboratory systems for synthesis and characterization, including participating in the mechanical, electrical, and electronic design, integration, and assembly of the platforms.
- Coordinate the testing and validation of automated platforms, including optical alignment and electronic testing.
- Diagnose sensor performance and create comprehensive troubleshooting manuals to optimize system reliability.
- Oversee quality control throughout the integration process to ensure automated laboratory system reliability during continuous and unattended testing operations.
- Design Automated Testing Equipment (ATE) to evaluate laboratory electrical subsystems, enhancing long-term scalability and system reliability.
- Design and validate control software based on complex compact models, including data management tools.
- Develop automation algorithms and workflows for the autonomous operation of the synthesis and characterization platforms.
- Design and implement the project database architecture covering all technical work packages.
- Centralize the results from all project partners and the big-data outputs of the synthesis and characterization platforms, ensuring secure storage and fast data access.

Management activities:

- Prepare technical documentation, user instructions, and safety guidance to ensure the correct and safe use of the experimental systems by other project participants.
- Contribute to project management, partner interactions, and the preparation of technical project reports.

- Define and implement the project data management plan, in line with FAIR principles, in coordination with the project partners.

Dissemination and training activities:

- Carry out dissemination, exploitation, and communication activities of the project results.
- Contribute to scientific publications and present research results at international conferences and project meetings.
- Train and mentor PhD students and young researchers involved in the project.

Qualifications and experience required:

Essential:

- PhD in Engineering (Industrial or Electronic Engineering or related fields).
- At least five years of proven experience in technological prototyping environments and development of advanced automated instrumentation systems.
- Experience across the full life cycle of prototyping projects, from concept to pre-industrial validation.
- Hands-on experience in electronic hardware design (LTSpice simulations, schematics, and PCB), sensor integration, hardware-software integration, and embedded systems.
- Proven experience in complex compact modeling and spatial statistics methods.
- Experience with microelectronics and reliability.
- Experience in programming (Python, C/C++, MATLAB) and embedded platforms (Raspberry Pi, Arduino, etc.).

Preferred:

- Experience in product development, industrialization, and transition from prototype to product.
- Advanced knowledge of programming (machine learning, predictive analytics, computer vision, or similar).
- Experience in automated electrical characterization and system integration.
- Knowledge of industrial communication protocols (RS-232, RS-485, SPI, I2C, CAN, Modbus, etc.).
- Experience in applying gamification frameworks.
- Strong technical communication skills, including documentation writing and presentation of results to industrial and scientific partners.
- Professional-level technical English.
- Availability to join the position upon completion of the selection process.

Personal skills:

- Strong analytical and problem-solving capabilities.
- High level of autonomy combined with capacity to work in interdisciplinary environments.
- Ability to work on complex technical developments and manage multiple tasks simultaneously.
- Proactive attitude towards innovation and technological implementation.
- Strong teamwork skills and ability to collaborate effectively with colleagues and partners.
- Creative thinking applied to the design of novel technical solutions.

Required documents:

Applicants must submit the following documents by email to Dr. Jorge Higuera (jeihiguera@irec.cat), Dr. Max Guc (mguc@irec.cat), and irecjobs@irec.cat, indicating the reference "Offer Ref. 27/010" in the subject line of the email.

- Curriculum Vitae, specifying the completed degree and any relevant professional experience.



- Academic certificates, including the PhD degree certificate.
- Motivation letter.

Offer of job position:

We offer an R2 (Postdoctoral Researcher) position, IREC internal category R2.2.1, under a full-time, permanent contract with a six-month probation period within the Process and Systems Monitoring Group.

Salaries will be paid in accordance with IREC's salary policy, depending on the candidate's qualification and professional experience.

IREC is an equal opportunity employer committed to diversity and inclusion. All qualified applicants will be considered regardless of gender, age, ethnic origin, religion, disability, sexual orientation, or any other personal circumstance.

Personal data provided by applicants will be processed by IREC solely for the purposes of this selection process, in accordance with Regulation (EU) 2016/679 (GDPR) and Spanish Organic Law 3/2018 on Personal Data Protection. Incorporation will take place at the start of the project and is scheduled to be effective before 31 December 2026.

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