



ICFO welcomes four new Marie Skłodowska-Curie Postdoctoral Fellows

Four researchers have been awarded the MSCA Postdoctoral Fellowships, giving the institute a 17% success rate, which is well above the global average of 9.6%.

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The [MSCA Postdoctoral Fellowships](#), part of Horizon Europe, support outstanding research and innovation collaborations across all areas of knowledge. The 2025 call has seen a **64.7% increase in applications**, marking the third consecutive year that the record has been broken. This increase in applications, from 2024's record number of 10,360 submissions to this year's 17,066 candidacies, is aligned with the trend seen in the past European calls, which have received an unparalleled number of applications. ?

New approaches to optoelectronic devices and quantum simulation

One of the awarded fellows is **Manuela de Franco**, a postdoctoral researcher at the [Functional Optoelectronic Nanomaterials](#) group at ICFO, led by Prof. Gerasimos

Konstantatos. I was interested in joining a group with strong expertise in quantum-dot materials and photodetectors," she says. De Franco has a strong background in the development and optimization of light-emitting diodes. She will now work on developing infrared-to-visible conversion devices that are real-time, efficient, and sustainable, suitable for wearable night-vision tools or monitoring systems. I hope to develop new quantum-dot device concepts and explore approaches that combine light emission and detection," she concludes.

Quentin Redon, postdoctoral researcher at ICFO's [Ultracold Quantum Gases](#) group, led by Prof. Leticia Tarruell. He joined the group over a year ago because of Tarruell's leadership in the cold atom community, but also because he heard it was an inclusive, collaborative and friendly environment, which was a must-have for him. He expects to develop a state-of-the-art reconfigurable Rydberg tweezer apparatus that can be useful for quantum simulation and computation of complex spin models. I plan to study a spin model that addresses long-standing problems in lattice gauge field theory, which connects both condensed matter and high-energy physics," he explains. "Our approach, developed here at ICFO, will allow us to simulate, for the first time, the magnetic and electric components of a two-dimensional gauge field theory, which is related to the physics of quantum spin ice in condensed matter."

Addressing challenges in quantum information and CO2 mitigation

I chose ICFO because it has an outstanding international reputation, and I was especially drawn to Toni's group because it is a young team of talented researchers," says **Carles Roch**, currently a postdoctoral fellow at Lund University who will soon join the [Quantum Information Theory](#) group led by ICREA Prof. Toni Acín. "The group is highly collaborative and welcoming, and its research interests align very closely with my own, making it an ideal place to develop this project." His project will address one of the remaining challenges in quantum information science, which is developing quantum cryptographic systems that are secure and also practical under real-world conditions. "My focus is twofold," he explains, "aiming at developing tools to certify ultimately secure quantum randomness and also, hoping to increase the practicality of quantum key distribution by introducing physically motivated assumptions."

Junmei Chen's research will tackle another major challenge in the field of sustainable energy: the efficient conversion of CO₂ into useful products, aiming to develop a new type of electrolyzer that is both carbon and energy-efficient. She currently works as a postdoctoral researcher at the [CO₂ Mitigation Accelerated by Photons](#) group, led by Prof. Pelayo Garcia de Arquer. Chen says she chose the group because of its leadership in the field of electrocatalytic CO₂ reduction, and especially because of the highly impactful work that the group has published in Science. "I expect to deepen my expertise and broaden my skills by delivering a robust platform with improved carbon utilization, energy efficiency, and

long-term stability”, she explains. Beyond scientific excellence, she also highlights the opportunity to learn other valuable skills. “I aim to produce high-quality publications, but also to build strong collaborations and strengthen key professional abilities such as project planning, mentoring, and proposal writing”, she remarks.

. Selected in this highly competitive programme, the four projects will contribute to advancing photonics research across multiple areas of science and technology.