Dr. Zakaria Said

Postdoctoral Researcher in Experimental Quantum Photonics

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Quantum Optics • Nanophotonics • Single Emitters • Light–Matter Interaction

Research Experience

Dec. 2025–present **Postdoctoral Researcher**, *Quantum Photonics Lab, Heriot-Watt University*, Edinburgh, UK
Single spin defects in silicon carbide: improving photon collection and electrical control of individual emitters for stable spin–photon interfaces. Part of the IQN Hub Quantum Memory work package and the European QuSPARC project.

Education

2020–2024 **PhD**, *Cavity Quantum Electrodynamics with Single Perovskite Nanocrystals Coupled to a Fibre-based Microcavity*
Supervised by Prof. Carole Diederichs and Dr Yannick Chassagneux, Sorbonne Université (SU), Paris, France
Research in the Nano-Optique team at the Laboratoire de Physique de l'École Normale Supérieure (LPENS). Doctoral scholarship awarded through the competitive EDPIF selection process.

2018–2020 **MSc in Materials Science and Nano-Objects (SMNO)**, *Sorbonne Université*, Paris, France
- Research internship (6 months), LPENS: design of the optical microcavity.
- Research internship (2 months), INSP: colour centres in silicon carbide, supervised by Dr Sophie Hameau.

2015–2018 **BSc in Physics**, *Sorbonne Université*, Paris, France
Years 1–2 at Université Nice Sophia Antipolis (2015–2017); final year at Sorbonne Université (2017–2018), which awarded the degree.

Publications & Presentations

Peer-reviewed articles

2026 *Cavity Quantum Electrodynamics with Single Perovskite Quantum Dots: Assessing Rabi Coupling Strength, Pure Dephasing, and Spectral Diffusion*, **Z. Said**, M. Cagnon Trouche, A. Borel, M.-R. Amara, J. Reichel, C. Voisin, C. Diederichs, and Y. Chassagneux.
Nano Letters, **26**(14), 4815–4821 (2026). DOI: 10.1021/acs.nanolett.6c00550.

2023 *Spectral Fingerprint of Quantum Confinement in Single $CsPbBr_3$ Nanocrystals*, M.-R. Amara, **Z. Said**, C. Huo, A. Pierret, C. Voisin, W. Gao, Q. Xiong, and C. Diederichs.
Nano Letters, **23**(8), 3607–3613 (2023). DOI: 10.1021/acs.nanolett.3c00793.

Selected presentations as presenting author

Jul. 2024 *Cavity Quantum Electrodynamics with Individual Perovskite Quantum Dots Coupled to a Fiber Microcavity.* ICPS, Ottawa, Canada. **Oral presentation**.

Nov. 2023 *Purcell-Enhanced Emission from a Single Perovskite Quantum Dot Coupled to a Fibered Microcavity.* GDR Technologies Quantiques, Montpellier, France. **Oral presentation**.

May 2023 *Modification of the Light Emission Properties of Individual Inorganic Perovskite Nanocrystals Using a Versatile Photonic Structure.* JPH, Biarritz, France. **Poster**.

Jan. 2023 *cQED with Microcavity-Coupled Individual Perovskite Nanocrystals.* GDR HOWDI, Antibes, France. **Poster**.

Other co-authored conference contributions

Apr. 2025 *Tunable light–matter coupling between single nano-emitters and a fibered microcavity.* Workshop on Strong Coupling, ENS, Paris. Oral presentation by Y. Chassagneux.

Mar. 2025 *Cavity Quantum Electrodynamics with Individual Perovskite Nanocrystals Coupled to a Fibered Microcavity.* nanoGe MATSUS Spring, Sevilla, Spain. Oral presentation by C. Diederichs.

Apr. 2024 *Individual Perovskite Nanocrystals Coupled to a Fibered Microcavity.* JPH, Aix-les-Bains, France. Oral presentation by C. Diederichs.

Nov. 2023 *Individual Perovskite Nanocrystals for Quantum Light Emission.* EPIC, Singapore. Oral presentation by C. Diederichs.

Mar. 2023 *Individual Perovskite Nanocrystals as Quantum Light Emitters.* E-MRS Spring Meeting, Warsaw, Poland. Oral presentation by C. Diederichs.

Teaching & Supervision

Heriot-Watt **Nanophotonics**: simulation-based practical classes with Lumerical FDTD; also delivered a lecture on the module.

Sorbonne Undergraduate optics and electronics practical classes and tutorials during my PhD. Co-developed a teaching module in which students build and automate a spectrometer, combining optics and Python.

Private tuition Mathematics, physics and chemistry for high-school students in Paris during my MSc.

Mentoring Hands-on supervision of one PhD student and two MSc students on cavity QED experiments with single quantum dots.

Technical Skills

Experimental Cryogenic confocal microscopy; single-emitter and time-resolved spectroscopy; photon correlations; microcavity alignment; ODMR; pulsed microwave spin control.

Design & fabrication Lumerical FDTD; photon collection modelling; PCB and microwave carrier design; optical fibre micromachining; cleanroom procedures; nanocrystal synthesis.

Computing Python instrument control, acquisition interfaces and data analysis; MATLAB; LaTeX.

Languages French (native), English (professional working proficiency), Arabic (fluent).

Additional Activities

2022–2024 *Elected PhD and postdoc representative on the LPENS laboratory council.* Representing young researchers and contributing to discussions on the research environment and working conditions.

Nov. 2022 *Organising committee member*, QICS three-day interdisciplinary quantum information workshop, Lessay, France. Planning, logistics, speaker coordination and on-site support.

2022 *Science outreach*: co-author and script contributor for the QICS animated film *Alice et Bob, au pays de l'intrication quantique.* YouTube.

2021–2024 Shared equipment and logistical coordination for the Nano-Optique team.