3 open Postdoc positions

Novel materials for quantum nanophotonics

The *Crystals and Quantum State Dynamics* group has **3 Postdoc openings for talented researchers** to join our team for developing novel materials for **quantum technologies based on nanostructured systems**. The goal is to strengthen our research on several on-going European and French national projects aiming to develop and demonstrate functionalities for quantum sensing and communications in novel rare-earth ion doped materials, including a hybrid interface between rare-earth doped nanomaterials and color centers in diamond.

Our team has extensive experience in the synthesis, fabrication, and characterisation of crystalline materials such as diamond and thin films doped with RE ions for various quantum applications [1-3]. The produced materials have been extensively used for various experiments worldwide, including optical quantum memories [4,5], single ion detection [6], and single spin interface [7]. To extend the potential of these platforms, the investigation of new host materials and their optimization is needed.

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[3] D. Serrano, S. K. Kuppusamy, B. Heinrich, O. Fuhr, D. Hunger, M. Ruben, and P. Goldner, Nature 603, 241 (2022).
[4] F. Bussières, C. Clausen, A. Tiranov, B. Korzh, V. B. Verma, S. W. Nam, F. Marsili, A. Ferrier, P. Goldner, H. Herrmann, C. Silberhorn, W. Sohler, M. Afzelius, and N. Gisin, Nat. Photonics 8, 775 (2014).
[5] M. Businger, L. Nicolas, T. S. Mejia, A. Ferrier, P. Goldner, and M. Afzelius, Nat. Commun. 13, 6438 (2022).
[6] C. Deshmukh, E. Beattie, B. Casabone, S. Grandi, D. Serrano, A. Ferrier, P. Goldner, D. Hunger, and H. de Riedmatten, Optica 10, 1339 (2023).
[7] Z. Wang, L. Balembois, M. Rančić, E. Billaud, M. Le Dantec, A. Ferrier, P. Goldner, S. Bertaina, T. Chanelière, D. Esteve, D. Vion, P. Bertet, and E. Flurin, Nature 619, 276 (2023).

Candidate's profile :
We are looking for an ambitious and talented researcher with a keen interest in material development and/or quantum physics. The ideal candidate holds a Ph.D. in physics or material science and has a strong experimental background in areas of material synthesis and nanofabrication, photonics, or optical spectroscopy.

Presentation of the host institution and host laboratory
The project will be realized at the Crystals and quantum State Dynamics (*cqsd.fr*) group at IRCP MPOE, renowned for its expertise in synthesizing state-of-the-art rare-earth ion-doped materials and pioneering the study of coherent properties of nanomaterials doped with rare-earth ions, including nanoparticles and thin films.
Our team also contribute to the development of diamond crystals containing a high density of NV centres as well as CVD-grown nanodiamonds. State-of-the-art samples have been produced within several European projects including a FET Open project (*NanOQTech*) an ERC advanced grant (*RareDiamond*) and two quantum flagship projects (*SQUARE* and *ASTERIQS*) devoted to nanoscale systems and sensors for quantum technologies.

The group is a part of the Material for Photonics and Opto-Electronics (MPOE) team of the Institut de Recherche de Chimie Paris, located in Paris. We offer creative and stimulating working

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conditions in a dynamic, international research environment. Our research facilities include modern optical laboratories and fabrication facilities to synthesize nanomaterials.

Place of work
11, rue Pierre et Marie Curie
75005 Paris, France

Contact information
For further information and to apply, please send an email including your CV and motivation letter to:
Dr. Philippe GOLDNER philippe.goldner@chimieparistech.psl.eu (Senior CNRS Researcher, team leader)