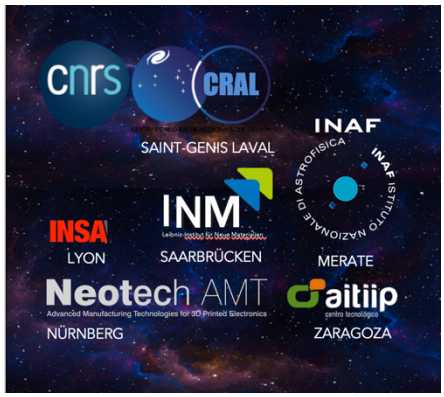
The **EIC Live-Mirror** project offers a **Post-Doctoral or System Engineer Position** funded by the Horizon EIC Live-Mirror Program.

Developing and Interfacing a Novel Optical Metrology, Calibration and Control System to Sense Ultra-Light, Self-Correcting, "Live" Mirrors

(CRAL/CNRS — Saint Genis Laval)

European Innovation Council
HORIZON EUROPE

Project Overview: **Disruptive Solution for Lighter Mirrors in Telescopes and Solar Technologies** Current mirrors used in telescopes and solar concentrators weigh half a metric ton per square meter, making them expensive and hard to stabilize. The EIC-funded Live-Mirror project aims to address this issue by introducing lightweight mirrors made of fire-polished glass-coated sheets. These innovative mirrors will be actively supported by electro-active polymer-based actuators. By leveraging advanced manufacturing techniques and real-time control systems, the 'live mirrors' will provide superior optical quality at a fraction of the weight and cost. This disruptive solution has the potential to revolutionize telescope and solar energy technologies by enabling the creation of large and precise telescopes and innovative solar energy systems through additive manufacturing and precise slumping techniques. (www.eic-live-mirror.eu)



Project Consortium – The EIC Live-Mirror project is an inter-disciplinary collaboration project led by Principal Investigator Dr Gil Moretto at CNRS/CRAL and five also leading laboratories: the Laboratoire de Génie Electrique et Ferroélectricité, LGEF/INSA Lyon (FR), the Leibniz-Institut for New Materials INM/Saarbrücken (DE), the industrial Neotech AMT/Nürnberg (DE), the Advanced Technology Center foundation (AITIIP/Zaragoza (ES) and the Instituto Nazionale di Astrofisica/-Brera (IT).

R&D Objectives: This 24-month postdoctoral or system engineer position aims to develop and interface a new optical metrology, calibration, and control system on the bench. The system is intended to sense the optical surface shape of the Live Mirror and its focal plane bias wavefront sensing in real-time. It will also control multi-spatial aberrations through in-real-time surface metrology, calibration, and control. This will provide the necessary information to drive force actuators to any surface.

Main Tasks: (1) design and integration on the bench of Live-Mirror hundreds force actuators overall metrology, calibration and multiplexing control interface; (2) defining and mitigation the compliance of the overall system towards the high-level specifications; (3) defining and mitigating the system error-budget; (4) defining procedure for the calibration, metrology, control, and validation of proofs-of-concept and (5) working on the trade-offs to possible risks and mitigations toward the overall system compliant with Live-Mirror high-level specifications.

Where in the Consortium: The position will be held at the CRAL/CNRS Saint-Genis Laval in close collaboration with Dr Maud Langlois and Dr Gil Moretto. It will also frequently travel to in-lab work with the European EIC Live-Mirror partners.

Job Description: We are looking for a highly motivated and talented scientist with a strong optics, electronics control, and cleanroom laboratory work background. The ideal candidate should have a keen interest in optical metrology, calibration, smart materials, and new technologies. Experience with electronics control, advanced optical multi-sensing, and closed-loop metrology is preferred, and familiarity with astronomical instrumentation is an advantage. Self-motivation is essential for working with the EIC Live-Mirror in our interdisciplinary research lab. Proficiency in both written and spoken French and English is required.

Application Process: Interested candidates should submit their application, including a CV, cover letter, and at least two reference letters, to Dr. Gil Moretto (Gil.Moretto@cnrs.fr) and Dr Maud Langlois (Maud.Langlois@univ-lyon1.fr).

The Deadline for applications is the 20th of August 2024.