



FOR IMMEDIATE RELEASE

kiutra pioneers large-scale, helium-3-free cryogenic cooling with LEMON project

Munich, Germany – September 1, 2024 – kiutra, a leader in advanced cryogenics, is excited to announce the launch of the **LEMON** project, a groundbreaking initiative aimed at developing a scalable, helium-3-free cryogenic cooling solution. Funded under the European Innovation Council (EIC) 2023 Pathfinder Challenge, LEMON will push the limits of continuous Adiabatic Demagnetization Refrigeration (cADR), providing a sustainable solution for the growing cooling demands in quantum technologies, particularly in quantum computing.

The project focuses on the creation of a modular system that can achieve large-scale refrigeration with high cooling capacities, while eliminating the reliance on the rare and strategically important helium-3. This innovation is set to revolutionize cooling in quantum technology applications by offering greater efficiency, reduced environmental impact and significant cost savings.

Alexander Regnat, Managing Director at kiutra commented:

“We are super-excited to launch the LEMON project, which enables us to quickly pursue an ambitious roadmap to scalable quantum cooling. We very much appreciate the support of the European Innovation Council, which has acknowledged the importance of cooling in ensuring the sovereign use of quantum technologies in Europe.”

LEMON project overview:

- **Objective:** The LEMON project aims to demonstrate the large-scale cooling capabilities of cADR. The project team will develop a cADR demonstrator capable of achieving unprecedented low temperatures with significantly higher cooling power.
- **Key milestones:** kiutra will provide critical insights into the scaling and implementation of this innovative refrigeration technology. The findings will enable the development of future systems with even greater cooling power and contribute to scientific understanding of under-explored magnetocaloric cooling processes.
- **Potential impact on developing quantum technologies:** The successful implementation of this project will mark a major step forward in addressing the reliance on helium-3 in

ultra-low temperature cooling for quantum technologies. Helium-3, an essential but scarce resource sourced primarily from North America and Russia, is a limiting factor in the development of applied quantum technologies. With the LEMON project, kiutra aims to contribute to both the worldwide scaleup of quantum technologies and the technological sovereignty of Europe's growing quantum industry.

- **Environmental benefits:** Through its technical advancements, the LEMON project will lower energy consumption and reduce the greenhouse gas footprint associated with quantum cryogenics.

About kiutra

We have dedicated ourselves to setting a new standard in cryogenics, characterized by high performance, fast delivery, absolute reliability and unmatched efficiency. Our cryostats use adiabatic demagnetization refrigeration (ADR), a well-established process, but we are the only company globally to offer it in a continuous configuration (cADR). This makes our systems the only alternative to helium-3-based cooling, with additional benefits like modular design, ease of use, and significant time, energy, and cost savings.

- **L-Type Rapid:** With a unique, effortless sample loading mechanism, this cryostat reaches milli-Kelvin temperatures in under three hours—making it the fastest testing and characterization cryostat on the market.
- **Cryogenics as a Service:** For reliable testing and characterization without needing your own facility, simply send us your sample, and our experts will handle the entire process, ensuring cost-efficiency and high-quality results.

Beyond our products and services, we actively shape the future of quantum technologies, working with world-class partners in national and European research consortia. Our focus moving forward is on offering systems, integrated solutions, and services across the entire quantum technology chain.

For more information on the LEMON project and kiutra's innovative cryogenic solutions, visit kiutra.com or contact:

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