

Job Advertisement

In the **FB09 Faculty of Chemistry, Pharmaceutical Sciences, Geography and Geosciences – Institute for Nuclear Chemistry** – we invite outstanding candidates to apply for a

PhD position in nuclear chemistry on “Tailor-made optimized actinide target preparation and characterization for LISA”

for a three-year contract starting on April 01, 2020 at the earliest.

The position is embedded within the “Laser Ionization and Spectroscopy of Actinides” (LISA) Innovative Training Network (ITN) funded via the HORIZON 2020 Marie Skłodowska-Curie Action program as the “Early Stage Researcher 11” (ESR 11).

Institution

[Johannes Gutenberg Universität \(JGU\) Mainz](#) is one of Germany’s largest Universities, currently having some 32,000 students, thereof 14 % from abroad. JGU has a strong research focus, regularly achieving solid positions in international research rankings. Annually, about 600 PhD students complete studies at JGU. The Welcome Center for visiting scholars and students provides support for all contractual, insurance, visa and accommodation issues. The JGU’s [Institute of Nuclear Chemistry](#) (merged with the further chemistry institutes from January 01, 2020 to form the Department of Chemistry) with a staff of about 80 FTE operates the [Research Reactor TRIGA Mainz](#) and has decade-long experience in actinide science, sample preparation, characterization, and application in the fundamental and applied sciences. It participates in the German cluster of excellence [PRISMA](#), collaborating closely with the [Institute of Physics](#), and the [Helmholtz Institute Mainz](#).

Position

Actinide sample preparation and characterization techniques for the LISA network will be developed and refined and applied to supply tailor-made actinide samples. Sample production methods include molecular plating and drop-on-demand printing, ideally suited for applications with special requirements (e.g., ultra-thin backing materials; restricted material availability; nano- and picoliter-volume droplet samples). Studies of the target behaviour under heat-inducing conditions (ion bombardment, high-intensity laser irradiation) will be performed, and the samples will be characterized using suitable techniques including α - β - γ -spectrometry; radiographic imaging; SEM with EDX; XPS; NAA, AFM. Standard samples of several actinide elements will be produced for utilization by the LISA partners, e.g., at University at Jyväskylä (Finland), Leibniz-University Hannover (Germany), GANIL Caen (France), and GSI Helmholtzzentrum Darmstadt (Germany).

In the course of the PhD work, the position holder will prepare advanced high-performance targets. Method optimization will allow sample production from minimized amounts of exotic actinide materials, expanding the range of isotopes that are available for laser-based study. An improved understanding of target behaviour under harsh conditions will be obtained, leading to production of targets with improved mechanical stability. Targets, e.g., of plutonium and of protactinium for applications at University of Jyväskylä will be produced. Reference sample introduction in liquid picoliter volume droplets will be established and incorporated into setups like a resonance laser secondary neutral mass spectrometer at Leibniz University Hannover’s Institute of Radioecology and Radiation Protection (IRS).

Secondment

This position includes secondments as follows:

For 2 months at University of Jyväskylä, Finland, for joint experiments with plutonium targets at the IGISOL facility, to work together with the LISA ESR4

For 2 months at GANIL, Caen, France, to work on target analytics on-line and off-line, for studies of target behaviour in harsh irradiation conditions.

Specific requirements

Institute-specific requirements may apply depending on the origin of the candidate. To qualify for a PhD position at JGU, candidates must demonstrate their proficiency in either German or English, e.g., from having graduated from a German-speaking or an English-speaking academic institution, or by providing a certification of English (e.g. TOEFL, ...).

For the specific PhD position at Institute of Nuclear Chemistry / Department of Chemistry of JGU, a Master's Degree in Chemistry with specialization in nuclear chemistry and practical lab experience with radioactive samples is required. Experience with open actinide samples is advantageous.

For more information about these aspects, or for further details about this specific ESR position please contact Prof. Dr. Christoph E. Düllmann at JGU Mainz (duellmann@uni-mainz.de).

For formal requirements for LISA ESRs, please consult the [PhD position posting on the CERN website](#). For information about the LISA ITN project in general, please contact Isabelle Fontaine at CERN (isabelle.marie.fontaine@cern.ch).

Offer

The successful candidate for this position will be offered the following:

- A challenging and versatile interdisciplinary project within an international context
- Enrollment in the PhD program of JGU Mainz
- A 3-year PhD position within the Department of Chemistry of JGU Mainz
- Salary and mobility allowance as defined by the EU ITN conditions and JGU Mainz regulations
- The Johannes Gutenberg-Universität Mainz attaches great importance to the compatibility of family and career. Family-friendly framework conditions, such as flexible working hours, offer optimal conditions for this.

Application

Deadline for this posting is January 31, 2020. Interested candidates apply via the online portal at <https://www.smartrecruiters.com/CERN/743999701854725-marie-s-curie-phds-project-lisa> and also send their full application documents including a short motivation letter, CV, copy of diploma/certificates and the names of two referees willing to provide supporting letters upon request as a single pdf-file by email, indicating "**LISA ESR 11 application**" as the subject line, to:

Prof. Dr. Christoph E. Düllmann
duellmann@uni-mainz.de

The Johannes Gutenberg University is committed to increasing the proportion of women in science and research and therefore encourages women to apply.

Disabled applicants will be given preference if equally qualified.

You will find the information on data protection at JGU Mainz in dealing with your application at: <https://www.verwaltung.personal.uni-mainz.de/files/2019/10/Datenschutz-Bewerber.pdf>

Job offers and further information also on the Internet:
<https://www.verwaltung.personal.uni-mainz.de/stellenausschreibungen/>