

**Freie Universität Berlin - Fachbereich Biologie, Chemie, Pharmazie -
Institut für Chemie und Biochemie Anorganische Chemie**

We work in the field of the chemistry and geochemistry of radioactive elements, with a particular focus on the actinides. We aim to understand their behavior in both natural and engineered environments, specifically how they interact with minerals, other solid materials, and dissolved substances. This knowledge is essential for evaluating the long-term safety of spent nuclear fuel disposal.

Research assistant (praedoc) (m/f/d)

with 75% part-time job limited to 3 years (subject to funding approval) salary grade

(Entgeltgruppe) 13 TV-L FU reference code:

WiMi_Praedoc_Radiochem_TRANSFER_Huittinen

City: Berlin; Starting date (earliest): At the earliest possible; Duration: befristet auf 3 Jahre; Remuneration: Entgeltgruppe 13 TV-L FU; Reference number: WiMi_Praedoc_Radiochem_TRANSFER_Huittinen; Closing date: 22/12/25

Working field**Job description:**

The Huittinen group at the Freie Universität Berlin, in collaboration with Helmholtz-Zentrum Dresden-Rossendorf (HZDR), is offering a Ph.D. position (75%) in environmental radiochemistry. This project focuses on the behavior of plutonium (Pu) in carbonate-rich environments, with an emphasis on its adsorption, incorporation, and redox chemistry in the context of deep geological repositories for high-level radioactive waste. The research aims to understand the complex interactions of Pu(III) and Pu(IV) with carbonate minerals, such as siderite (FeCO_3) and calcite (CaCO_3), under reducing conditions. By combining spectroscopic techniques (e.g., UV-vis, HERFD-XANES, EXAFS, Raman, Mössbauer, and EPR) with microscopic methods (TEM, SEM/EDX) the project will provide novel insights into the redox processes governing Pu mobility and retention in the near-field environment of clay-based nuclear waste repositories. The outcomes will contribute to the safety assessment of nuclear waste disposal systems and advance our understanding of actinide behavior in the environment.

The doctoral thesis is part of the joint project TRANSFER - Training and Research Academy for Nuclear Safety and Future Expertise on Geological Repository Systems, jointly funded by the Federal Ministry for Research, Technology and Space (BMFTR) and the Federal Company for Radioactive Waste Disposal (BGE). The consortium brings together five Helmholtz Centres and five universities. This joint research project is organized as an interdisciplinary graduate school, combining individual supervision with intensive collaboration across institutions. The structured qualification program comprises seminars, summer and winter schools, conference participation, and research stays at partner institutions.

Tasks of the Ph.D. candidate:

- Conduct experimental studies on the adsorption and incorporation of Pu(III/IV) into carbonate minerals.
- Synthesize and characterize FeCO_3 and CaCO_3 phases under controlled conditions.
- Investigate the redox chemistry of Pu in both solution and solid phases using advanced spectroscopic and analytical techniques.
- Analyze and interpret spectroscopic data to understand Pu behavior in carbonate-rich environments.
- Disseminate research findings through high-impact publications and presentations at international conferences and workshops.
- Participate in project meetings, summer/winter schools, and collaborative research activities.
- Contribute to teaching activities within the research group.

Requirements

Requirements:

completed university degree (M.Sc. or Diploma degree) in chemistry, geochemistry, or a comparable natural or engineering science

Desirable:

- A strong background in radiochemistry, geochemistry, or mineralogy.
- Willingness to handle open radioactive materials.
- Willingness to conduct extended research stays at the Helmholtz-Zentrum Dresden-Rossendorf.
- Willingness to participate in the radiation safety organization.
- Prior experience in spectroscopy, diffraction, materials chemistry, and characterization.
- Interest in interdisciplinary research.
- Excellent English communication skills.
- Ability to work both independently and collaboratively in an interdisciplinary team actively participate in conferences and workshops.

Application

How to apply:

We look forward to receiving your application, which should include the following documents:

- A one-page letter of motivation together with details of previous research experience and future goals.
- Your CV (including a list of publications if applicable).
- Copies of your Bachelor's and Master's degree certificates.

As part of the application process, your application documents and personal data will be forwarded to the GFZ coordination. By submitting your application, you consent to this transfer.

Applications should be sent by e-mail, together with significant documents, indicating the **reference code, no later than December 22nd 2025** in PDF format (preferably as one document) to Prof. Dr. Nina Huittinen: nina.huittinen@fu-berlin.de or postal to

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More information at <https://stellenticket.de/199522/BUA/>
Offer visible until 22/12/25

