

PhD Position: Organoxenon Compounds as Versatile Oxidizers in Organometallic Chemistry

Pérez-Bitrián Lab – Humboldt-Universität zu Berlin – Starting Date: Fall 2025

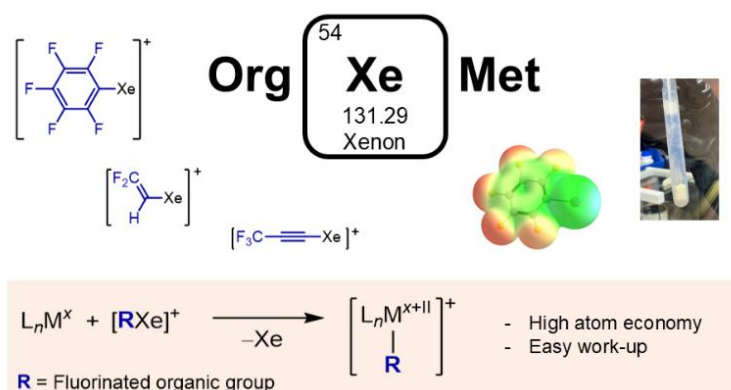
Who are we?

Our group bridges the fields of **noble gas chemistry** and **organometallic chemistry**, in which **fluorine chemistry** plays a key role. Our research is located in the field of preparative inorganic and organometallic chemistry, at the interface of main group and transition metal chemistry. In particular, we are now actively working in the investigation of **organoxenon(II) compounds**, i.e., those containing Xe–C bonds, and their use as **electrophilic transfer reagents targeting organotransition metal complexes in high oxidation states**. Working with us allows an integrated learning of different synthetic methodologies, often under challenging conditions, as well as of various characterization techniques. You can know us better here: <https://www.perez-bitrian-lab.com/>

The project

This PhD project will build upon our previous work on arylxenonium(II) species, extending it to more complex organic groups, including alkenyl and alkynyl moieties. The successful candidate will synthesize both known and novel **organoxenonium(II) salts** bearing a variety of organic substituents with different degrees of fluorination. These compounds will be studied not only for their **fundamental chemical properties** but, more importantly, for their potential as **electrophilic transfer reagents** in the synthesis of high-valent organometallic complexes. In particular, the project will involve:

- Designing and synthesizing organoxenonium(II) salts.
- Evaluating their stability, Lewis acidity, and redox properties.
- Exploring their reactivity as electrophilic transfer reagents toward metal centers, both to access high-oxidation-state metal complexes and to investigate their potential role in cross-coupling processes.



The position

The position is fully funded (TVL-E13 67%) through an Emmy-Noether Programme from the DFG.

Your profile

We are looking for enthusiastic candidates with a strong background in synthetic inorganic and/or organometallic chemistry. Applicants should hold (or be close to completing) a Master's degree (M.Sc. or equivalent) in Chemistry or a closely related field. Experience with inert atmosphere techniques (e.g. Schlenk line, glovebox) is required, as well as experience with common characterization techniques (NMR, MS, IR, etc.). Experience in inorganic fluorine chemistry is an asset, but not mandatory. A high level of English proficiency is essential, whereas no knowledge of German is required. The candidate should bring high motivation, demonstrate teamwork skills and be willing to learn new techniques.

Application

Applications (including a CV with two references, relevant academic transcripts and a cover letter stating background, motivation and interest, in a single PDF) should be sent within 4 weeks and referencing the **job ID DR/151/25** to Dr. Alberto Pérez-Bitrián (alberto.perez-bitrian@hu-berlin.de).