

PhD Student Research Group Freunberger: Singlet oxygen in battery chemistry

- Klosterneuburg (Vienna), Austria
- Fully-funded PhD with internationally competitive salaries (details)

The group of Stefan Freunberger (group website) is looking for an outstanding PhD student interested working on a frontier topic of O₂ redox chemistry at the Institute of Science and Technology Austria. Exploiting oxygen redox chemistry in batteries may enable a step change in energy storage but the cell chemistries also suffer from irreversible reactions originating from the oxygen redox. Singlet oxygen (¹O₂) formation has only recently been recognized as the cause of these irreversible reactions. Our group, together with others, has shaped the topic and knowledge of ¹O₂ in non-aqueous redox chemistry [<u>1</u>].[2],[3]. However, knowledge about effects, formation, and mitigation mechanisms is still critically underdeveloped. The aim of the post is to close these critical knowledge gaps with relevance to both energy storage and pure chemistry.

We have previously established the now widely adopted methods for ${}^{1}O_{2}$ detection in non-aqueous electrochemistry. We shall expand these methods and apply them to in-situ electrochemistry (non-aqueous & aqueous), complemented by a suite of in/ex-situ methods and synthesis. To gain a deeper theoretical understanding, we will collaborate with groups specialized in quantum chemical calculations.

Your profile

- BSc or MSc in Chemistry, Materials Science, or Chemical Engineering or related field
- Commitment to research excellence with experience according to career stage
- Knowledge in physical chemistry, electrochemistry, and spectroscopic and diffractive techniques
- Knowledge in inorganic and organic syntheses incl. under inert conditions is a plus
- Interest in battery electrochemistry
- Interest in time resolved spectroscopy and quantum chemical methods

Application documents: Please send a single pdf document containing your cover letter, CV, publication list, and contact information of 2 to 3 references.

To submit your application please email: <u>stefan.freunberger@ist.ac.at</u>. Please use the position name above as your subject line.

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* This position comes with possible overpayment depending on education, qualification and work experience. ISTA processes your personal data in accordance with the law. For more information, please refer to www.ista.ac.at/data-protection.