

**Post-Doctoral Research Fellow Opportunity – Purdue University
Oxidation Modeling of High Temperature Alloys**

Introduction – The Titus group at Purdue University is seeking a post-doctoral research fellow in the area of first-principles density functional theory calculations to assist with alloy design of high temperature refractory alloys. The work aims to understand and predict the oxidation behavior of high temperature refractory alloys utilized in extreme environments. The post-doctoral researcher will:

- Perform density functional theory calculations on refractory alloys and oxides to understand defect energies, phase stability, and diffusion kinetics
- Collaborate extensively with government labs, industry, and experimental colleagues
- Utilize the Department of Defense High Performance Computing clusters for large and high-throughput calculations.

The unique combination of first-principles-informed alloy design with experimental benchmarks and validation will enable the Post-Doctoral Fellow to gain a deeper understanding of feedback loops existing between modeling and experiments. The Fellow will also gain understanding of the aims and missions of various funding agencies and world-leading industrial research centers. This experience will be especially beneficial towards candidates desiring a position in academia or at a national lab.

Qualifications – The ideal candidate will:

- Hold a Ph.D. or equivalent degree in Materials Science & Engineering or closely related field,
- Understand principles of density functional theory and be able to perform said calculations, understand of thermodynamics related to defect energetics and phase stability,
- Possess a basic understanding of oxidation mechanisms in metals,
- Effective verbal and writing skills (especially useful for biweekly team meetings),
- This position is subject to Export Control regulations

Sponsorship & Period of Performance – The open Post-Doctoral Fellowship is supported by a subcontract through the Air Force Research Laboratory in Dayton, OH. This position is currently accepting applications, and appointment is on a yearly basis assuming satisfactory performance, with funding available until September 1, 2022.

Application Process & Deadlines – Please email a cover letter describing relevant experience, a CV, and the names and contact information of two references, to Professor Michael Titus (titus9@purdue.edu). Review of applications will begin immediately, and the position will remain open until filled.

EEO/AA Policy – Purdue University is an EOE/AA employer. All qualified individuals, including minorities, women, individuals with disabilities, and veterans are encouraged to apply.

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