# Development of machine learning models for tungsten under extreme conditions

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**Funder: United Kingdom Atomic Energy Authority**

This PhD position promises a unique blend of theoretical exploration and practical application, offering you the opportunity to delve into the scientific innovation.

Fusion energy can play a major role in tackling the climate emergency and the UK is committed to connect a fusion power plant to the grid by 2040. To accelerate developments in various areas required for commercialising fusion, including in materials development and analysis, application of recent advancements in informatics is critical.

This project aims to use machine learning techniques in estimating the behaviour of tungsten under extreme conditions. Tungsten, a pivotal plasma-facing material in nuclear fusion applications, stands resilient in the face of heavy irradiation and intense thermal environments. However, its mechanical behaviour under various service conditions imposed by a fusion reactor is difficult to test. Therefore, we invite passionate and forward-thinking researchers to contribute to the development of an accurate and efficient material model using machine learning.

Departing from traditional methods, the project goal is to model the response of Tungsten using carefully designed measurements, powered by advanced machine learning techniques as well as the laws of physics.