



## Materials for Future Fusion and Fission Technologies: Volume 1125

By -

CAMBRIDGE UNIVERSITY PRESS, United Kingdom, 2014. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.To meet the demands of exponentially growing global energy consumption, extensive research is necessary for future fusion and Generation IV fission reactor power plants; however, structural material performance is a limiting factor. Conventional materials cannot withstand the complex thermomechanical loading, higher operating temperatures, and high irradiation doses. Consequently, research efforts are underway to develop and qualify novel structural materials. Likewise, research on fuel materials seeks to understand and mitigate issues such as oxidation and evolution of the fuel microstructure to high burn-up. To minimize trial-and-error experiments, major fission and fusion materials programs have expanded their use of multiscale materials modeling and simulation. The modeling efforts, in concert with specific experimental validation activities, complement the large experimental programs. This book highlights nuclear materials issues and challenges on experimental and modeling platforms. Topics include: fundamental defect behavior; experimental and theoretical investigations of radiation damage; behavior of oxide dispersion strengthened steels and other advanced structural materials; corrosion and surface coatings; and modeling and performance of nuclear fuels.



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