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NUCLEAR MATERIALS

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials

Irradiation of materials, including those used in nuclear reactor applications, may alter phase stability or phase transformation kinetics, resulting in unexpected or undesired phases or microstructures. These microstructures may result in unexpected or unpredictable performance characteristics.

Topics of interest include, but are not limited to:

- Irradiation altered kinetics
- Phase transformations at constant chemical compositions
- Crystal structure change and polymorphism
- Disordering
- Amorphization
- Phase transformations with chemical composition changes
- Precipitate dissolution
- Segregation and precipitation
- Effect of phase transformations on mechanical properties or material functionality
- Synergistic computational and experimental studies

Fundamental understanding of the mechanisms contributing to the above topics are of interest, as well as practical understanding that leads to greater understanding of these effects on in-service performance.

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