METALLURGY AND PROPERTIES OF ZR ALLOYS FOR NUCLEAR APPLICATIONS

Course overview

Providing an overview of many of the issues concerning in-service Zr alloys through lectures and visits

Who is the course for?

Qualified engineers, scientists and technicians in charge of fabrication, characterization, application and safety evaluations of Zr based components for nuclear purposes.
Students carrying out specialised studies on materials science and nuclear engineering.

Entry requirements

No particular requirements

Competences covered

- Acquire a general view of Zr alloys from the processing to in service properties including safety concerns;
- Highlight the main processing parameters affecting the as-received material properties;
- Explain the relationship between the microstructure evolution and the physico-chemical and mechanical properties: under irradiation, during corrosion, oxidation and hydriding in light water reactors environment, under accidental scenarii;
- Give a reactor feedback and next future trends.

Duration 35 hours (5 days)
Location Saclay

Groups limited to No limitation
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Course code 792

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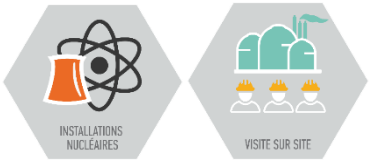
Course content

- Overview of Zr alloys for nuclear applications ; Processing and forming of industrial components.
- Phase diagrams and control of microstructures ; Irradiation effects.
- Corrosion in water (without and under irradiation) ; High temperature oxidation and LOCA behaviour.
- Impact of H Pick-up: embrittlement, RIA, post irradiation creep.
- Reactor feedback and future trends in design and requirements.



Why take this course?

Lectures given by PhD professionals experts fom CEA, MINES ParisTech, EDF, Areva in Nuclear Materials Sciences
Visit of Hot Cells facilities (LECI Laboratory) at the CEA - Saclay

Please contact us for more information on this course.