SUSTAINABLE MATERIALS, PROCESSES AND SYSTEMS FOR ENERGY TRANSITION

MUR DM 117/NEWCLEO - Development of advanced structural materials resistant to liquid lead corrosion for Lead Fast Reactor (LFR) applications

Funded By	NEWCLEO S.R.L. [P.iva/CF:12517780016] MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
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Context of the research activity	Alumina Form Austenitic (AFA) steels are very promising materials for LFR and other corrosion resistance applications. The main purpose of this study is to continue the AFA steels developments made in the framework of European programs (such as GEMMA) and fill the gaps to bring optimized grades to qualification in nuclear codes (RCC-MRx…). In particular, this includes: - Thermomechanical tests in air and lead (creep, fatigue…) - Manufacturing studies (tubes, powder metallurgy…) considering also new technologies like AM (Addictive Manufacturing) and HIP (i.e Near-Net Shape Hot Isostatic Pressing). Thermodynamical and basic characterization campaigns are also in the scope to further optimize AFA grades or to explore other promising materials (High Mn steels, MAX phases…). Progetto finanziato nell'ambito del PNRR – DM 117/2023 - CUP: E14D23002050004
Objectives	Progetto finanziato nell'ambito del PNRR – DM 117/2023 - CUP: E14D23002050004 Scientific Responsible: Andrea Barbensi, andrea.barbensi@newcleo.com Main seat to carry out the reserach activity: Politecnico di Torino / NEW CLEO
	• Preferably, Master degree or equivalent in Materials Science, Metallurgy, or electrochemistry

Skills and competencies for the development of the activity	• Knowledge and/or experience in main laboratory characterization techniques • Knowledge and/or experience in testing mechanical properties of materials (tensile, creep, fatigue, toughness…) • Knowledge in phases equilibrium thermodynamics • Knowledge and/or experience in software relevant for materials science (python, matlab, thermocalc…) • Knowledge in corrosion is an advantage