

# SIMMER CODES POST-TEST VALIDATION ACTIVITY BASED ON LIFUS5/MOD3 EXPERIMENTS FOR PBLI-WATER INTERACTION

*Tuesday, 14 November 2023 13:50 (20 minutes)*

The in box-LOCA (Loss of Coolant Accident) is a key safety concern to be addressed in the design of the WCLL-BB (Water-Cooled Lead-Lithium Breeding Blanket). In this accident, a rupture of the tubes in the coolant circuit would cause a severe exothermic chemical reaction occurring between the primary coolant (water) and the Lead-Lithium alloy. The experimental facility LIFUS5/Mod3 was realized at ENEA Brasimone RC to investigate the phenomena associated with the interaction between lithium-lead and water. One of the main objectives of the experimental campaign is to provide data to develop and validate the SIMMER codes to be used on fusion scenarios related to the WCLL-BB safety design.

In the present work, post-test numerical simulations carried out by the University of Pisa with the codes SIMMER-III and SIMMER-IV are analyzed and compared against new experimental data obtained in the LIFUS5/Mod3 experimental campaign. It is shown that the code is capable of correctly capturing the main phenomena involved in the experiments, even though the quantitative predictions are still not satisfactory; however, the quantitative results presented and analyzed here are a crucial asset for the ongoing development and validation of the chemical model and are used to address the further steps needed to fully validate the codes.

## Speaker Bio

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