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## Corrosion test results of ARAA and FMS steel in the Experimental loop for liquid breeder

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A helium cooled liquid lithium (or lead lithium) concept has been developed to design a liquid breeder blanket in Korea. Ferritic-martensitic steel (FMS) was selected as a structural material for fusion reactors, and a commercial-scale Advanced Reduced Activation Alloy (ARAA) has been developed. An Experimental Loop for a Liquid breeder (ELLI), which we designed and fabricated ourselves, was constructed to validate the electromagnetic (EM) pump as well as to test the effects of the magneto-hydrodynamics (MHD) of a liquid metal flow, and to investigate the compatibility of PbLi with the structural materials of FMS. Thus far, performance tests on each component, such as the heaters and control systems used for heating the loop, were conducted, and characteristic tests using a magnet and an EM pump were carried out. Corrosion tests using ELLI were conducted using grade 91 FMS steel and ARAA for a 250 hour period (100+150 hours). In this study, a commercial FMS with grade 91 and developed ARAA were used for corrosion test-specimens to compare the corrosion characteristics in the flowing PbLi loop. A corrosion test was conducted for investigating the compatibility of PbLi using structural materials. The effects of the oxide coatings on the prevention of the corrosion progress were also investigated.

## Eligible for student paper award?

No

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