

## **Preliminary experiments on compatibility of SiC<sub>f</sub>/SiC composites and SiO<sub>2</sub> in static liquid LiPb at 800°C**

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The lithium-lead blanket design is one of the most promising choices for fusion reactor blankets [1]. The liquid metal LiPb is considered as tritium breeder, neutron multiplier and coolant in them. Because of the excellent high-temperature fracture, creep, corrosion and thermal shock resistance, etc. [2] The SiC<sub>f</sub>/SiC composites are considered as very promising structural material candidates for fusion reactors and flow channel insert of the lithium-lead blanket design. The compatibility of SiC<sub>f</sub>/SiC composites prepared by different processes and SiO<sub>2</sub> in static liquid LiPb at 800°C for 1000 hours was presented in this paper. The experiments were conducted in a capsule named DRAGON-ST which was designed and constructed by FDS Team of Institute of Plasma Physics, Chinese Academy of Sciences. The specimens were placed in different Mo crucibles, all the crucibles were full of liquid LiPb and welded in a stainless steel capsule. The experiments were performed under high-purity argon atmosphere (>99.999%). Two kinds of SiC<sub>f</sub>/SiC composites were exposed to the experiment. One was prepared by the reaction-sintered (RS) process while the other coated with mullite by plasma spraying (PS) process. Weight changes were measured. And surface appearances and composition of the specimens were examined by Scanning Electron Microscope and Energy Dispersive Analysis of X-ray before and after the experiments. The results showed that the SiC<sub>f</sub>/SiC composites had good compatibility with static liquid LiPb at 800 °C during 1000 hours corrosion. But SiO<sub>2</sub> suffered serious corrosion. Further study for longer experiment time needs to be carried out to evaluate the compatibility of SiC<sub>f</sub>/SiC composites with LiPb completely.

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