Contribution ID: **451** Type: **Oral**

The experimental investigation of wetting property for liquid lead lithium alloy with breeder blanket materials

Monday 5 June 2017 17:20 (20 minutes)

The dual-cooled lead lithium (PbLi) blanket is considered as one of the main options for the Chinese DEMO reactor. The liquid PbLi alloy is used as breeder material and coolant. The Reduced Activation Ferritic/Martensitic (RAFM) steel and the silicon carbide fiber (SiCf) are selected as its structural material and functional material respectively. In the present experimental investigation, the special vacuum experimental device has been built, and the 'dispensed droplet'modification of the classic sessile droplet technique has been used to investigate the wetting property and inter-facial interactions for PbLi/RAFM steel, PbLi/SS316L steel, PbLi/SiC and PbLi/SiCf couples. The contact angles were measured between the liquid PbLi and the various candidate materials under working temperature from 300 oC to 480 oC. The results could provide meaningful compatibility database of liquid PbLi alloy and valuable engineering design reference of candidate structural materials and functional material for future fusion blanket.

Eligible for student paper award?

No

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Session Classification: M.OP2: Materials I

Track Classification: Blankets and tritium breeding