

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Tungsten control in long pulse H-mode discharges on EAST¹ L ZHANG, J HUANG, ASIPP, S MORITA, NIFS, X GONG, Z XU, X YANG, Z SUN, Z WU, L HU, X ZHANG, ASIPP, EAST TEAM — Tungsten impurity is well controlled in EAST H-mode discharges applying on-axis RF heating and Li wall conditioning, which provide great benefit to achieve the reproductive long pulse H-mode discharges (pulse length >60s) with low level of tungsten concentration (Cw), e.g. 3.0×10^{-6} - 1.5×10^{-5} . It was found that the tungsten accumulation can be suppressed by increasing ELM frequency after superimposing 4.6GHz LHW on the NBI phase [L. Zhang et al., NME 2017]. On-axis ECRH with power of 0.35MW is also very effective to control tungsten in core plasma. After injection of ECRH, Cw decreases up to 40% and the peaked profile of tungsten in the core plasma becomes hollow, suggesting a weakened neoclassical tungsten transport in the core region. The real-time Li aerosol injection has also been applied to enhance the particle recycling control on EAST. It is found that with Li aerosol injection, stable profiles of tungsten are sustained both in the plasma core and at the edge, while the concentrations are halved compared to the normal H-mode discharge, suggesting a reduced tungsten source. The mechanism of effective tungsten control will be further discussed in this work.

¹This is supported by NNSF of China (Grant Nos. 11575244, 11575249) and the NCMFERP of China (Grant Nos. 2014GB124006, 2015GB110005)

Juan Huang
ASIPP

Date submitted: 14 Jul 2017

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