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## **P2.118 On-line measurement and removal of hydrogen isotopes in the plasma-facing material of tungsten**

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The on-line measurement, removal and recovery of hydrogen isotopes in plasma-facing materials are important issues for Tokamak during long-time discharge operations. The laser induced desorption system (LIDS) was designed and built from the laser induced breakdown spectroscopy (LIBS) system with a quadrupole mass spectrometer (QMS). As one part of the comprehensive ECR plasma system, LIDS can be used for in-situ hydrogen isotope retention analysis. Deuterium was introduced into tungsten by means of the gas-phase hot charging method and the linear plasma method, respectively. The results shows that the amount of deuterium introduced into tungsten by plasma is higher than that by the thermal diffusion method. The desorption activation energy (1.04 eV) of deuterium introduced into W by plasma is higher than that (0.81 eV) of deuterium by the gas-phase hot charging method. The deuterium trapped in tungsten can exist steadily for a long time under ambient conditions. And deuterium introduced in W by the gas-phase hot charging method is difficult to be removed, since the depth distribution of deuterium is far greater than that of deuterium introduced by plasma.

**Presenter:** XIAOQIU, Ye (Institute of Materials China Academy of Engineering Physics Mianyang)

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