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Observation of Tungsten Blister-Generated Grain Orientation Change According to Hydrogen Ion Incident Angle[1] MYEONG-GEON LEE, Department of Energy Systems (Nuclear) Engineering ,Seoul National University, Korea, NAM-KYUN KIM, Manufacturing Technology Center, Samsung Electronics, KI-BAEK ROH, GON-HO KIM[2], Department of Energy Systems (Nuclear) Engineering ,Seoul National University, Korea — The hydrogen ions in the ITER divertor enter at an energy of less than 100 eV and generate blisters on tungsten surface. Preliminary studies showed that sub micrometer size small blisters are generated only in grain orientation (111) by vertically incident ions. However, the incident angle of the magnetic field to the ITER divertor is designed to be over 85 degree as the surface normal. In this study, we observed the variation of the grain orientation with small blister caused by deuterium ion incident angle. The ions were incident at an energy of 100 eV on a tungsten target tilted by 80 degrees to a magnetic field. We used fluid ion flux model in weakly collisional magnetized presheath and electric field dominant debye sheath to calculate ion incident angle. The incident angle was calculated at 17 degree from the surface normal. Small blisters were generated on (111) direction and (212) direction grain. (212) grain direction is same as those rotated 16 degrees of (111) grain. It is interpreted that small blisters are generated on the (212) grain with the lowest surface density in the direction of the ion motion and (111) plane with where migration of hydrogen in depth direction adsorbed on the surface occurs largely.

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