

# (SG1) Multi-phase and Atomic/Molecular physics group report



Date: Apr. 16, 2024

Apr. 17, 2024 (M. Shoji)

Time: 12:22 – 13:30

Shot#: 189602 – 189621 (20 shots)

Prior wall conditioning: He GDC (4/13, 4/14)

Divertor pump: Off

Gas puff: He

Pellet: None

LID: No

NBI#(1, 2, 3, 4, 5) = gas(H, H, H, H, H)=P(-, -, -, -, -) MW

ECH(77GHz) = ant(1.5-Uo, 5.5-U, 2-OUR)=P(-, -, -) MW

ECH(154GHz) = ant(2-OLL, 2-OUL, 2-OLR)=P(0.145, 0.143, 0.100) MW

ICH(3.5U, 3.5L, 4.5U, 4.5L) = P(0.28, 0.25, 0.24, 0.28) MW

$R_{ax}=3.60$  m,  $B=2.750$  T,  $\gamma=1.2538$ ,  $B_q=100$  %

## Topics

1. Exposure of material samples into the LHD edge plasma by means of the manipulator (C.P. Dhard (IPP), D. Naujoks (IPP) and S. Masuzaki)

# Exposure of material samples into the LHD edge plasma by means of the manipulator

C.P. Dhard, D. Naujoks (IPP), S. Masuzaki

Shot #: 189602-189621

Cycle: 3 min. 30s.

$(R_{ax}, B_t, \gamma, B_q) = (3.6 \text{ m}, 2.75 \text{ T}, 1.2538, 100.0\%)$

Working gas: He,  $P_{ECH} \sim 0.4 \text{ MW}$ ,  $P_{ICH} \sim 1 \text{ MW}$ , Duration: 25s.

## Objectives

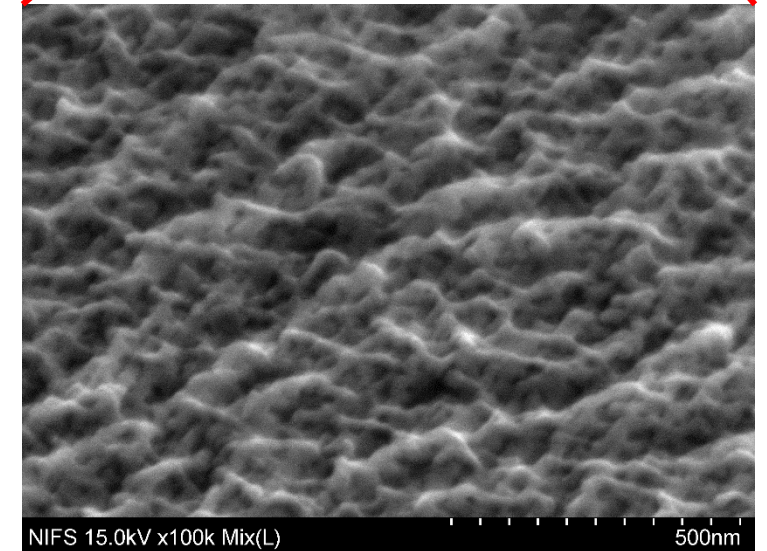
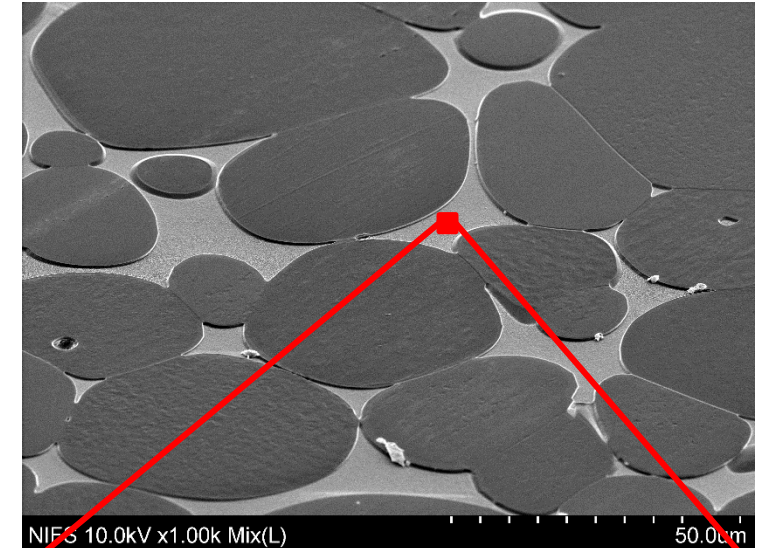
- To form FUZZ-like nanostructure on surfaces of W alloy samples by exposing to He plasma.
- The samples with the FUZZ-like structure will be exposed to H plasma in the next experiment to investigate the change of surface morphology.

## Method

- Two sets of W-alloy samples (W95NiFe, W97NiFe) were installed to the position of the divertor strike point by using the manipulator at 10.5L port.
- The samples were exposed to He plasma in 25s. Discharge sustained by ECH and ICH.

## Results

- Unfortunately, due to ECH problems, the samples could not be exposed to the plasma for the prescribed time.
- Surface analysis will be conducted before the next experiment on 11 June.



FUZZ-like structure formed on a W-alloy sample in the experiment in the 24<sup>th</sup> campaign