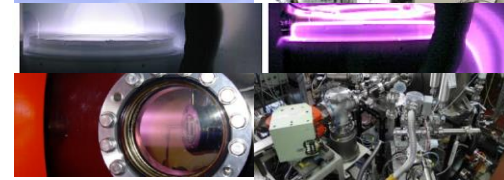


ADVANCED PLASMA ENGINEERING – UEDA LAB



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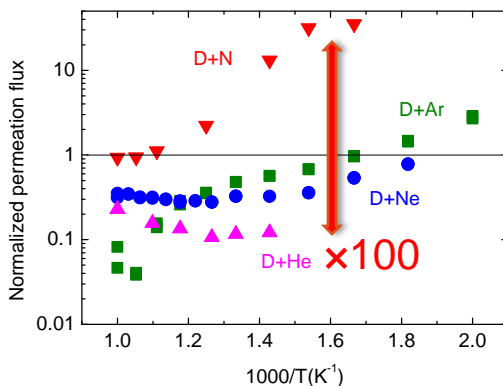
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Recent Research Highlights

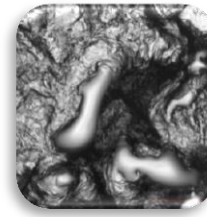
A) Permeation studies shows the large impact and difference implanted impurities (He, Ne, Ar, and N) have on the transport of Deuterium (an isotope of Hydrogen) through Tungsten (an important fusion material)



Research Theme

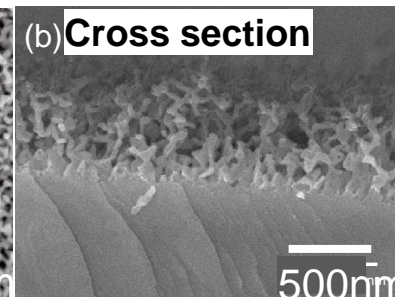
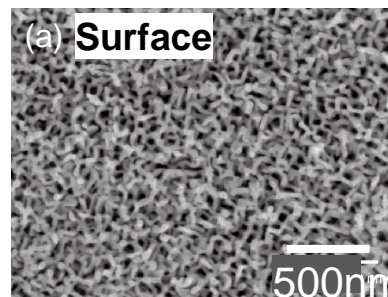
Materials are the key to unlocking nuclear fusion power as a safe and sustainable energy source. We study the incredibly complex interaction between fusion plasma and materials from both a fundamental and engineering point of view. From such framework, we pursue development of novel plasma generation technology and ion beam technology. Pulsed heat and particle loading effects on refractory materials are also our world leading research subjects.

B) All-around fusion systems code was developed to analyze effects of plasma surface interaction on the reactor operation. Importance on physics of tungsten surface was emphasized.



C) Experiments of controlled heat flux irradiation by Nd:YAG laser reveal the melting threshold of tungsten.

E) Production and application of tungsten nanostructure by high density He plasma exposure.



D) Raman spectroscopy reveals Carbon layers formed under complex fusion conditions in numerous worldwide fusion experiments can be parameterized.

