

Title	Impact of Helium Ion Energy Modulation on Tungsten Surface Morphology and Nano-Tendrill Growth
Authors	Kevin Woller, Dennis Whyte, Graham Wright
Scientific Quality	<p>A newly discovered surface morphology due to helium irradiation of tungsten has been shown to develop when the ion energy is modulated with rf frequencies. The morphology, which is very distinct from W fuzz, requires additional considerations as to what might be expected in a fusion energy device. We have studied the growth parameter space to understand where to expect the new morphology. We have also studied the implications of the fragility of the nanostructures through mass loss and imaging. The reason why there is a difference in the surface response due to ion energy modulation is discussed in terms of current models.</p>
Relevance to Fusion Energy	<p>The newly discovered surface morphology has the same relevance to Fusion energy as W fuzz does, as the two surface morphologies appear under similar growth conditions. The newly discovered surface morphology may be even more relevant in areas of fusion that have ion energy modulation, such as in RF plasmas.</p>
Originality	<p>The surface morphology due to ion energy modulation has not been reported on at the Fusion Energy Conference.</p>
Impact, Timeliness	<p>Knowledge of how changes in the surface morphology might be avoided is urgently desired to avoid costly delays and pitfalls in using tungsten for fusion energy devices.</p>