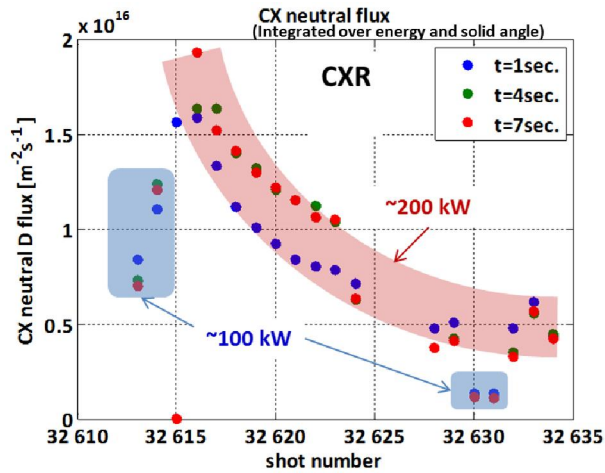


EX/P6-21: Plasma-Wall Interaction Studies in the Full-W ASDEX Upgrade during Helium Plasma Discharges



Startup of He plasmas in ASDEX Upgrade

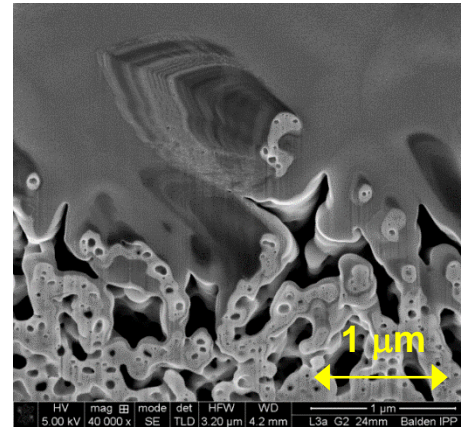
- Clean plasmas (**He content >80%**) obtained by applying **Ion Cyclotron Wall Conditioning (ICWC)**
- Global D release from the walls **>5 times larger** during ICWC than during overnight outgassing or during plasma discharges in He



Evolution of the D content of the ICWC plasmas during a series of discharges at different powers, as deduced from the charge-exchange neutral D flux. D content drops by a factor of 4 during the ICWC cleaning.

Exposing W samples to ELMy H-mode plasmas in the outer strike point region

- **No net erosion** observed but all surfaces covered with **co-deposited layers** \Rightarrow due to strong W sources in the main chamber
- No clear signs of **nanostructure ("fuzz") growth or destruction** albeit plasma conditions would favor their formation
- **Retention of He** low and not dependent on the substrate or its roughness



Focused ion-beam image of a nanostructured W sample after exposure to He plasmas. The original surface features are covered with a thick deposited layer, consisting of >20 sublayers.