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Surface analysis studies on the wall conditioning of TCSU AYDIN TANKUT, JAMES GROSSNICKLE, GEORGE VLASES, FUMIO OHUCHI, University of Washington — To overcome the temperature barrier set by impurity radiation losses in the earlier TCS experiments, TCS-upgrade (TSCU) has been built with particular focus on obtaining UHV compatible wall surfaces. To further minimize impurity ingestion into plasma, wall-conditioning techniques including glow discharge cleaning (GDC), siliconization and Ti-gettering are being carried out in TCSU. The chemical and morphological characterization of the wall surfaces is done using x-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM) and energy dispersive x-ray spectroscopy (EDS). This study presents an overview of the surface analytical studies on the wall surfaces throughout the first year of TCSU operation. The effect of GDC, siliconization and Ti-gettering on TCSU surfaces, along with subsequent glow discharges and plasma shots, will be discussed. Additional data from experiments carried out in a separate system for detailed study of these techniques will be presented.

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