

He desorption from W/He co-deposit layers by TDS

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In this study we present results of the He released from W/He co-deposit layers obtained by thermal desorption experiments.

Sample: 500 nm of W/He were co-deposited on W substrates 12.5 x 12.5 x 5 mm³, by means of Magnetron Sputtering of a W electrode in an Ar:He gas mixture.

He retention measured by Thermal Desorption experiments performed with two different heating systems (inductive and resistive).

TDS results

The samples were heated up to 1000°C at a ramp rate of 50°C /min.

TDS spectrum of sample W-He_05092022

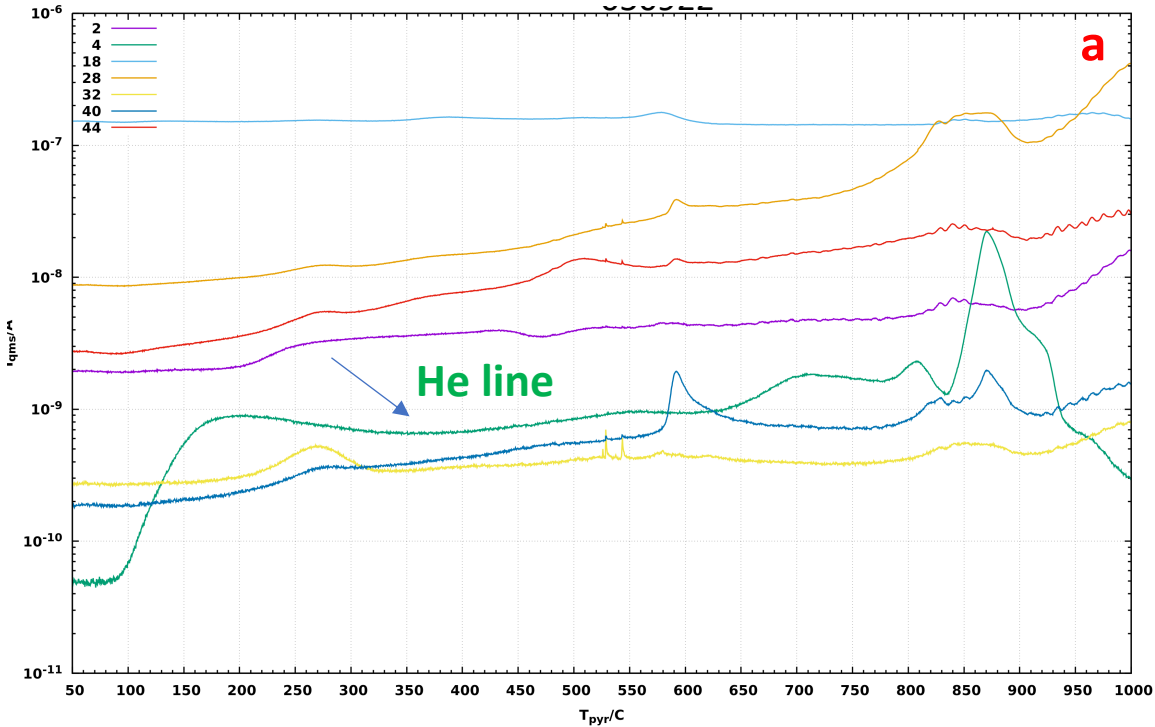


Figure a. TDS experiment with inductive heating system, using pyrometer for temperature measure.

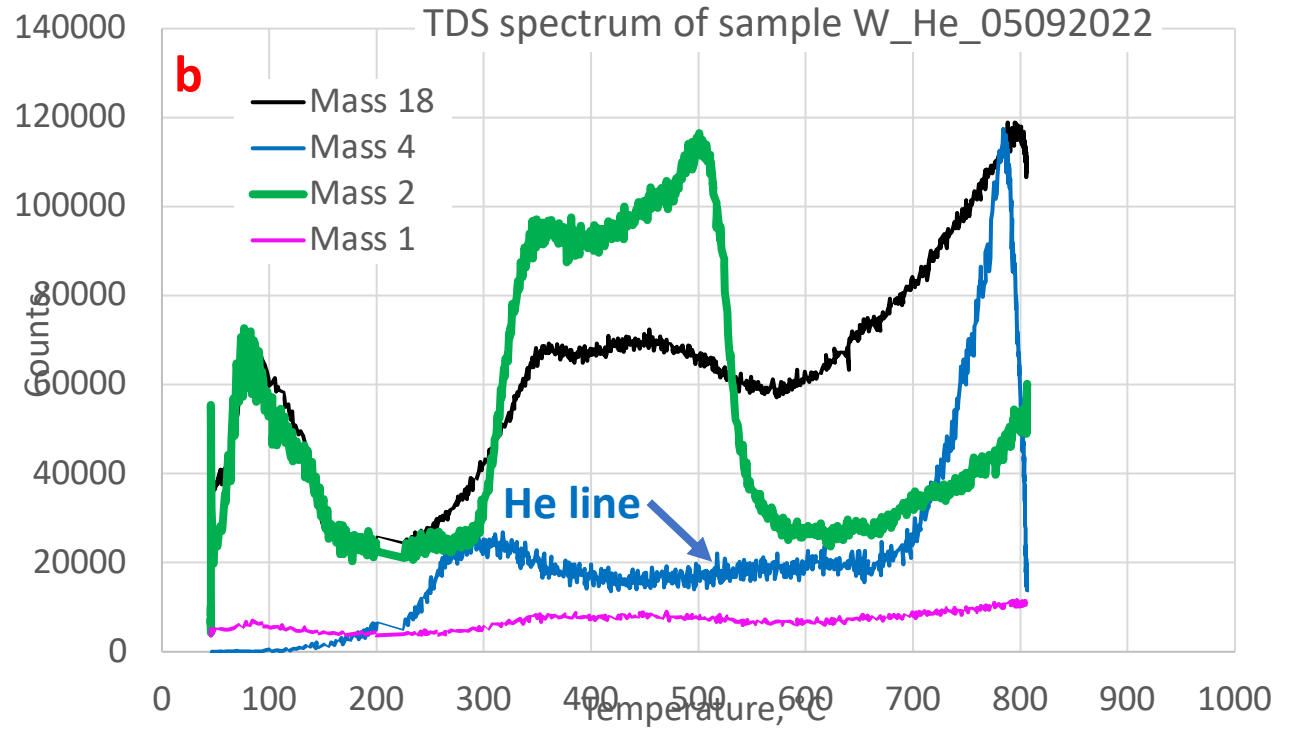
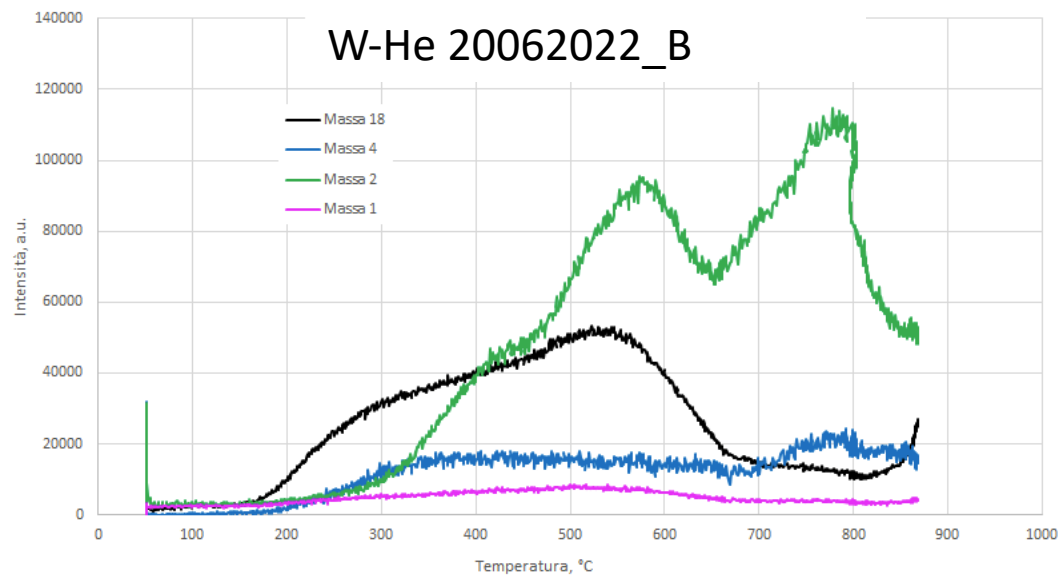
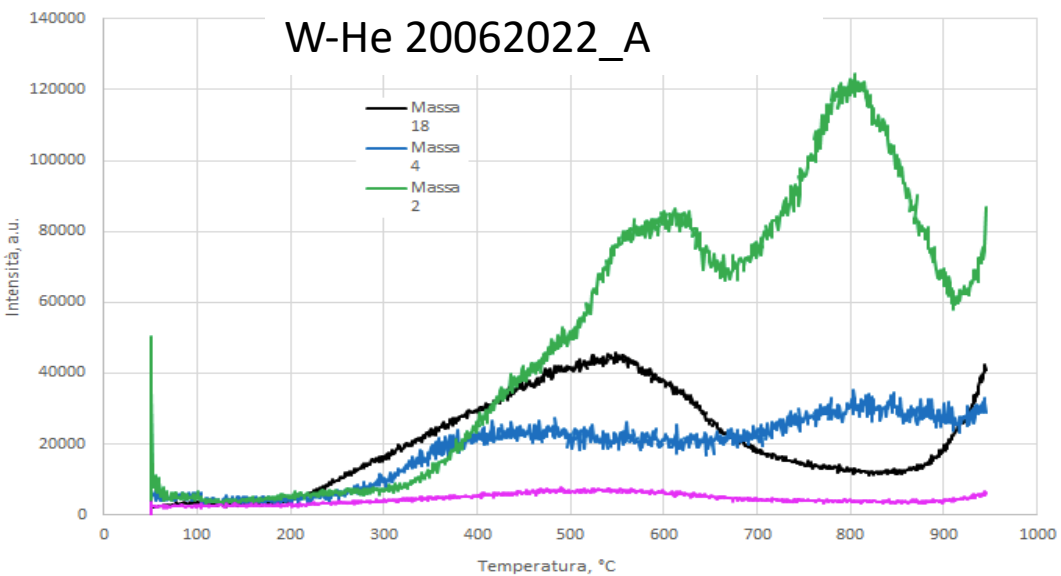


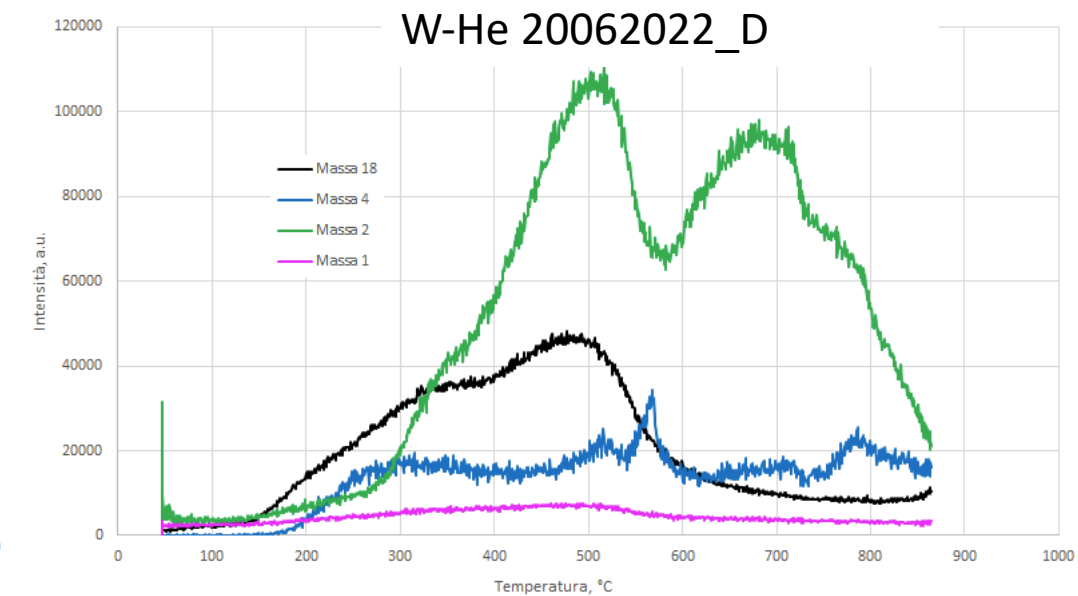
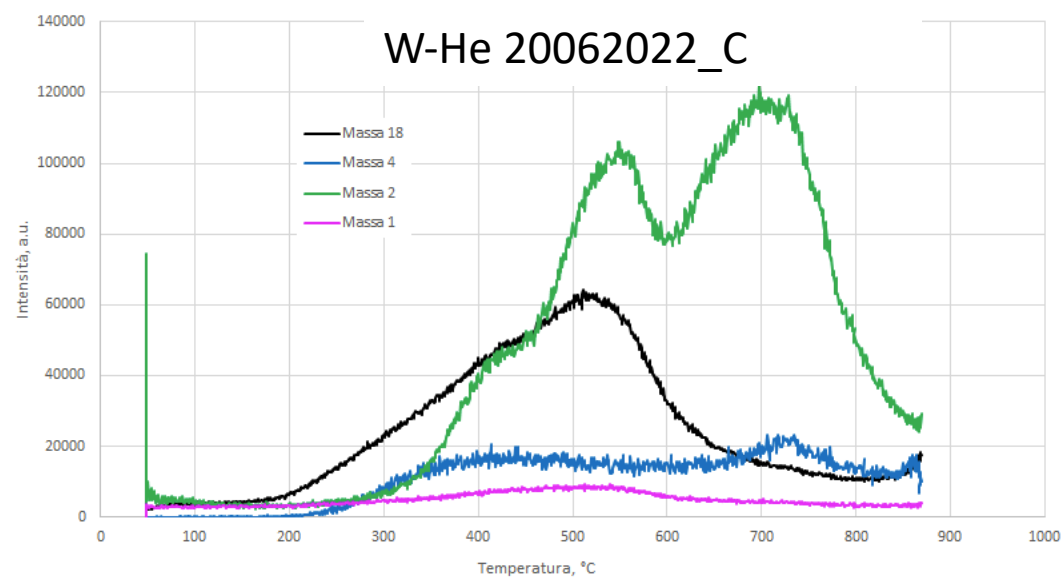
Figure b. TDS experiment with resistive heating system, using thermocouple for temperature measure.

In the above figures the He ion current is reported as a function of the temperature. In both types of experiments, the sample exhibits a broad desorption peak at about 250°C and another one at at 870°C

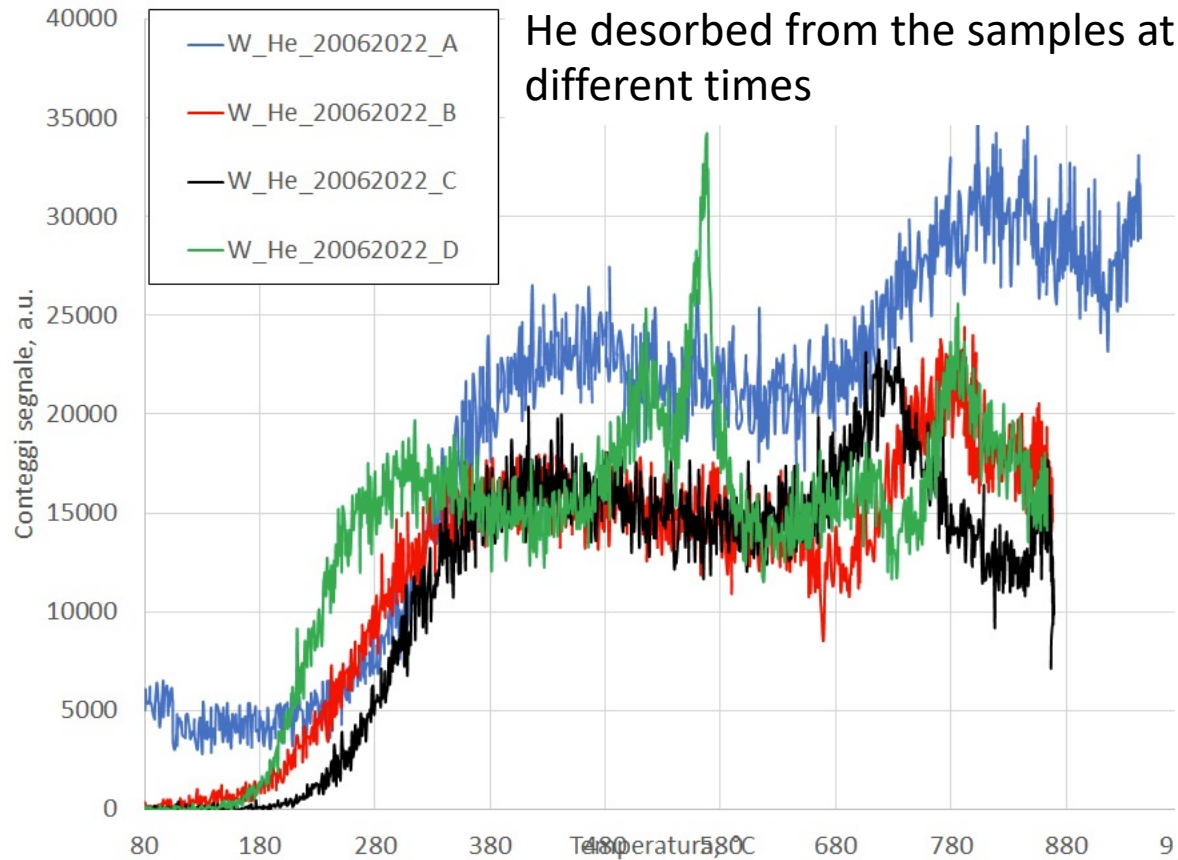
TDS spectra of the samples after different times



A as prepared
B one day aging
C three days aging
D one week aging



He desorbed from the samples at different times



Comparison between He retained in W-He co-deposited on SS and W-He coposited on W bulk

