**U TH O with water**

**PK: preparation chamber**

**AK: analysis chamber**

**ov: overview**

**RT: room temperature**

**08/04/2013**

Film sputtered in the Omicron system and fed into the hot machine .

Mounted on a sample rod, some aluminum foil underneath so that there is better thermal contact.

001 ov

002 ThU

003 O

004 Th4\_U4f (60%Th40%U)

005 O1s

006 HeII UV source: 22.3A/70V

007 HeI

008 HeII

+5.0\*10-6 mbar H2O (180sec), at -182 (~8.5mV) (valve: scale 0.5)

UV source: 22.0A; 74V

009 HeII -17 8°C 15:09

010 HeI -173°C 15:1 1 no H20 appears to have been dumped .

+1.0\*10-5mbar H2O (180sec), at -182 (~8.5mV) (valve: scale 0, 9)

UV source: 22.0A; 74V

011 HeII -16 1°C 1 5:20

012 HeII -15 6°C 15:2 4 no H2O

+1.0\*10-5mbar H2O (180sec), at -150 (~8.5mV) (valve: scale 0, 9)

UV source: 22.0A; 74V

013 HeII -150°C 15:33 no H2O

**10/04/2013**

Sample is ejected again and attempts to establish better thermal contact. The silicon wafer with the sample broke. I mounted a stainless steel frame and fixed the Si plate underneath. I'm curious to see if I can't see the metal...

014 HeII

+1.0\*10-5mbar H2O (180sec), at -188 (~8.5mV) (valve: scale 0, 9)

UV source: 21.8A; 82.7V

015 HeII -177°C 16:46

016 HeI -177°C 16:49

017 HeII -173°C 16:50

018 HeI -168°C 16:53

019 HeII -1 54°C 16: 58 mass 44 at about -125°C

020 HeI -114°C 17:01

021 HeII -87°C 17:03 mass 18, pressure rose to 2e-7mbar in AK

022 HeI -57°C 17:06

023 HeII -4 3°C 17:09

024 HeI -30°C 17:12

025 HeII 0°C 17:14

026 HeI 20°C 17:18

027 HeII 25°C 17:20

**11/04/2013**

028 HeII old film from yesterday..

**1 6/04/2013**

UV source opened and new filament inserted. Source cleaned with acetone and 240 grit sandpaper.

Pictures taken from unpurified source.

Power supply connected to filament Degaus

**18/04/2013**

029 HeII after baking out the UV source

**19/04/2013**

030 HeII UV source aligned with the help of several LaborBoys . Intensity a lot higher!

031 u4f

**22/04/2013**

New film from Omicron facility introduced and assembled. Place some aluminum foil under the sample plate for better thermal contact .

032 ov

033 Th4\_U4f 71%Th29%U

034 O1s

035 HeII

036 HeI

037 HeII double measurement time

038 HeII

+1.0\*10-5mbar H2O (180sec), at -190°C (valve: scale 1.25)

UV source: 22.5A; 81.6V

039 HeII -185°C 11:4 9 RodPos:500

040 HeI -179°C 11:53

041 HeII -175 °C 11:54

042 HeI -162°C 11:57

043 HeII -148°C 11:59

044 HeI -130 °C 12:02

045 HeII -136°C 12:06

046 HeI -130°C 12:09

047 HeII -98 -53 12:11 at about 88°C the water came, pressure in AK 4.4e-7mbar, source went out again...

048 HeI -35°C 12:16

049 HeII - 28°C 12:18

050 HeI -20°C 12:21

051 HeII -1 5°C 12:23

052 HeI -12°C 12:26 UV source just before the end went out..

053 HeII -8°C 12:30

054 HeI +25°C 12:34

055 HeII +25°C 12:36

056 HeII +25°C 12:39 RodPos:0 (rod moved a little to the side and measured)

057 HeII +25°C 12:43 and back to RodPos: 500 RED. -EFFECT DETECTABLE!

Film cleaned with ion cannon . 5e-5mbar Ar at 2kV

058 HeII

Sample in AK: 5.3E-7 exposed to oxygen for 50sec. (~ 25 Langmuir) at RT

059 HeII

Sample in PK: 1E-6 exposed to oxygen for 100sec. (~ 100 Langmuir) at RT

060 HeII

061 ov

062 Th4 f\_U4f

063 o1s

064 HeII

065 HeI

+ 1.0\*10-5mbar H2O (180sec), at -177°C (valve: scale 1.25)

UV source: 22.5A; 81.6V

066 HeII -1 67 °C 16:12

067 HeI -162°C 16:15

068 HeII -158°C 16:17

069 HeI -155°C 16:20

070 HeII -1 49 °C 16:24

071 HeI -147°C 16:27

072 HeII -14 4 °C 16:31

073 HeI -143°C 16:34

074 HeII -130°C 16:36

075 HeI -122°C 16:39

076 HeII -115°C 16:42

077 HeI -106°C 16:45

078 HeII -100°C 16:48

079 HeI -93°C 16:52

080 HeII -90°C 16:54

081 HeI -86°C 16:57

082 HeII -83°C 16:58

083 HeI -78°C 17:01

084 HeII -74°C 17:04

085 HeI -69°C 17:07

**23/04/2013**

Sample in PK: 1E-6 exposed to oxygen for 100sec. ( ~ 100 Langmuir ) at +100°C

086 HeII

087 HeI

088 Th4\_U4f

089 ov

Sample in PK: 5E-5 exposed to oxygen for 50sec. (~ 2500 Langmuir) at RT

090 HeII

091 HeII

092 HeI

No noticeable oxidation! Oxygen line pumped out to valve access laboratory F113.

Sample in PK: 5E-5 exposed to oxygen for 50sec. (~ 2500 Langmuir) at RT

093 HeII

Sample in PK: 5E-5 exposed to oxygen for 50sec. (~ 2500 Langmuir) at RT

094 HeII

095 HeI

096 Th4 f\_U4f

097 o1s

098 ov

**24/04/2013**

Sample in PK: 5E-5 exposed to oxygen for 50sec. ( ~ 2500 Langmuir ) at +100°C

099 HeII

**25/04/2013**

100 HeII new film mounted from Omicron facility-

101 HeI

102 Th4f\_U4f

103 O1s

104 ov

Measured the same film after it was in the AK for about 4 hours.

105 HeII ATTENTION!!!! The uranium has reduced?????

106 HeI

107 Th4f\_U4f

108 O1s

109 ov

**29/04/2013**

110 Th4f\_U4f

111 O1s

122 ov

113 HeII

114 HeI

+1.0\*10-5mbar H2O (180sec), at -191°C (valve: scale 1.25)

UV source: 22.6A; 80.5V

115 HeII -181 °C 13:59

116 HeI -173°C 14:02

117 HeII -171°C 14:04

118 HeI -167°C 14:07

119 HeII -164°C 14:09

120 HeI -161°C 14:12

121 HeII -158°C 14:13 at approx. -140°C came nitrogen and Co2

122 HeI -135°C 14:16

123 HeII -105°C 14:18 at approx. -80°C water pressure Ak: 2.7e-7mbar

124 HeI - 68°C 14:21

125 He II -53°C 14:23

126 HeI -38°C 14:26

127 He II -28° C 14:28

128 HeI -18° C 14:31

129 HeII -13°C 14:33

130 HeI +5°C 14:38

131 HeII +14°C 14:40

132 HeI +23°C 14:43

133 HeII +24°C 14:46

134 HeII +23°C 14:49 RodPos : 0 (sample moved to the side and measured)

135 HeII +23°C 14:52 RodPos:500 (sample returned to old position)

136 Th4f\_U4f

137 O1s

138 ov