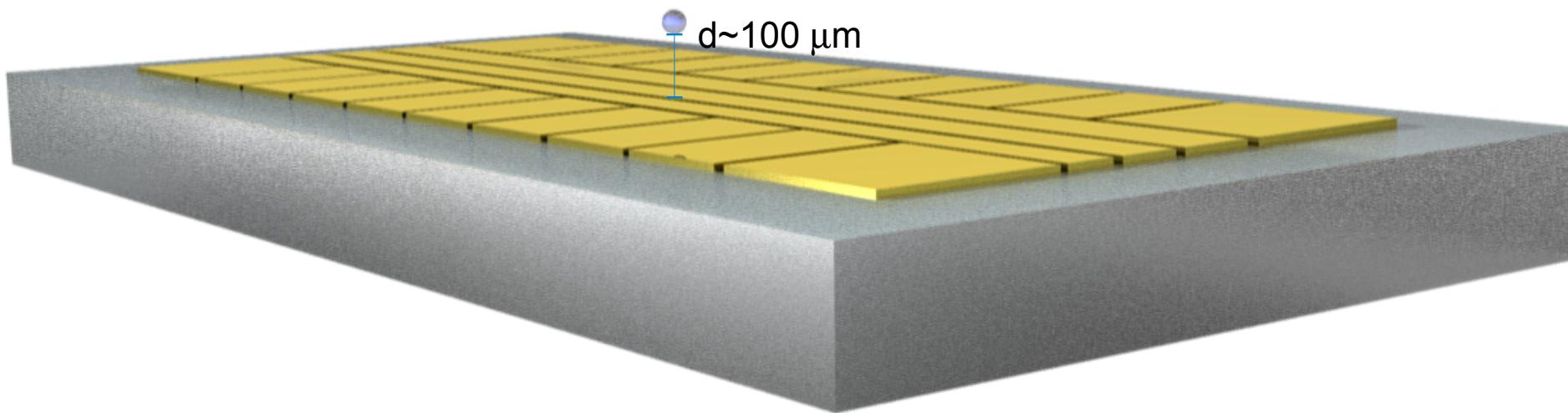


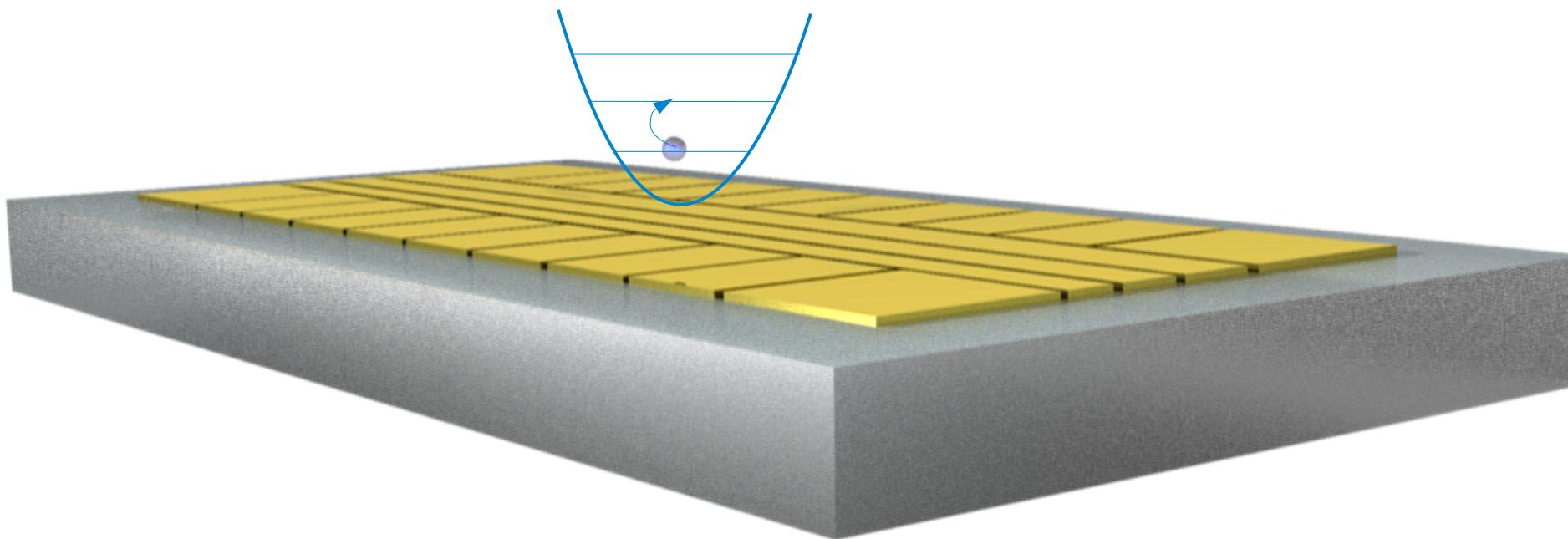


# Ions as surface noise sensors





# Ions as surface noise sensors





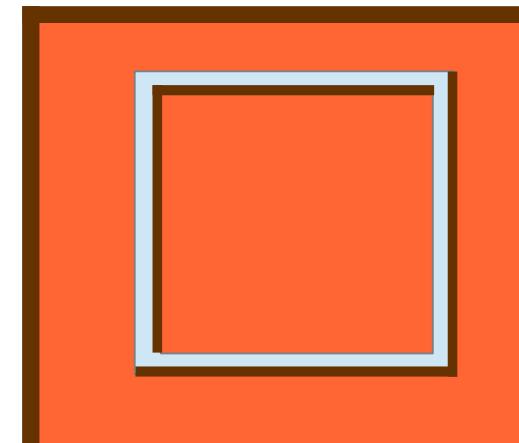
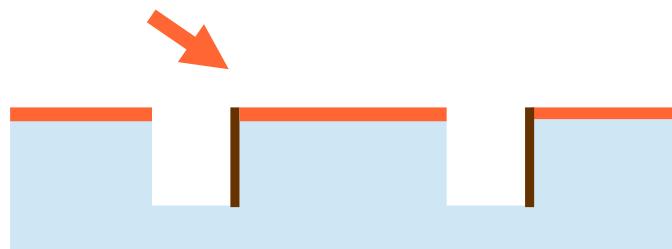
# Fabrication of robust traps



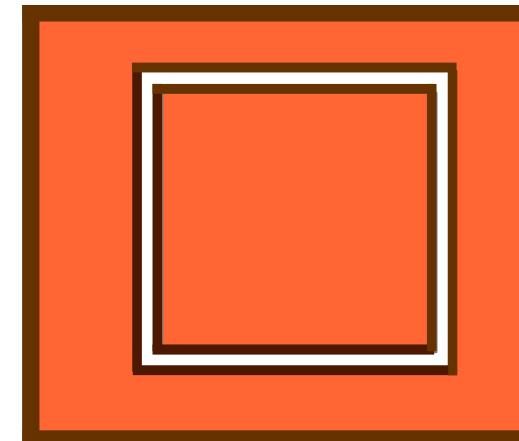


# Fabrication of robust traps

Step 1: evaporate diagonally



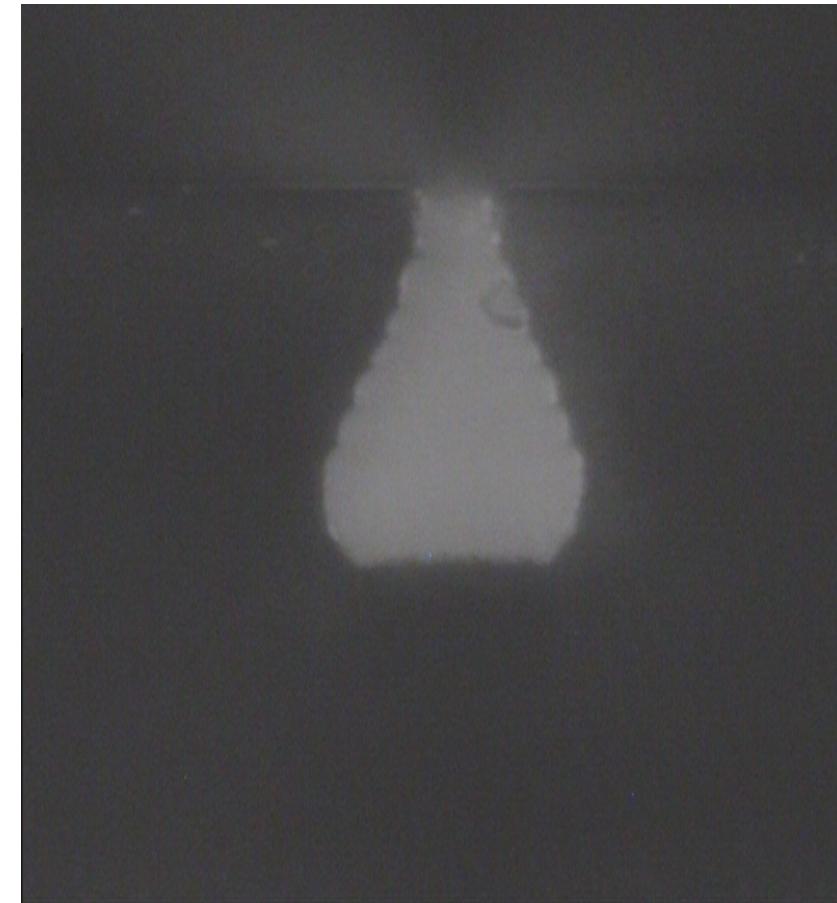
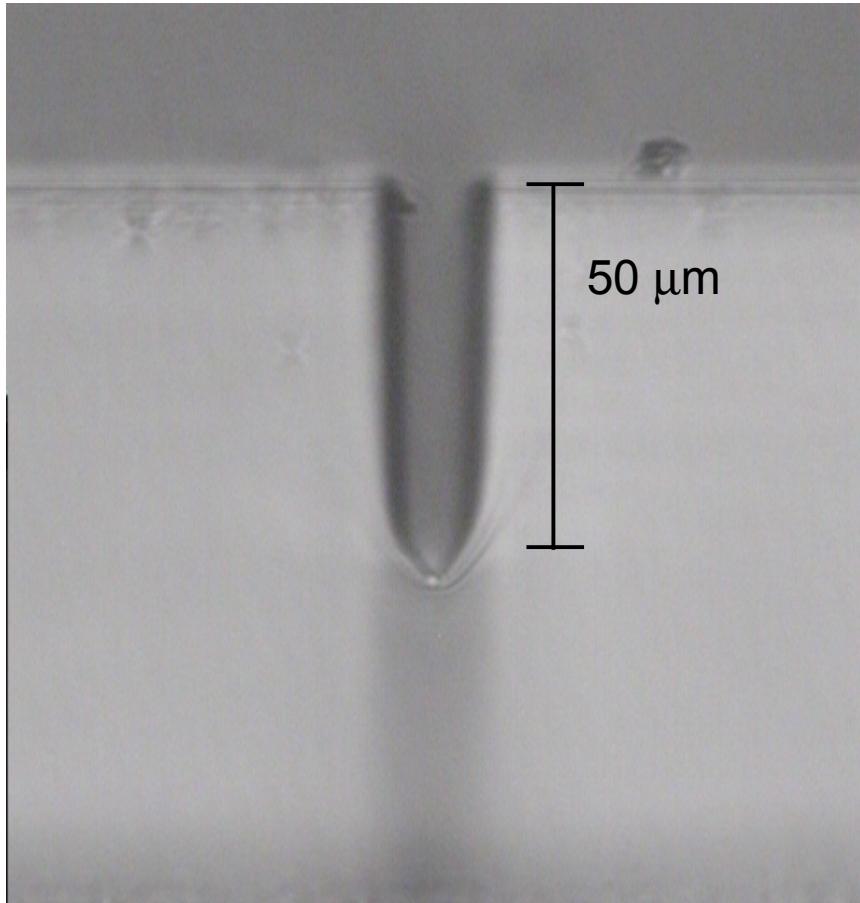
Step 2: evaporate from opposite side



Advantages: robust, flexible materials choice, high quality films, large aspect ratio

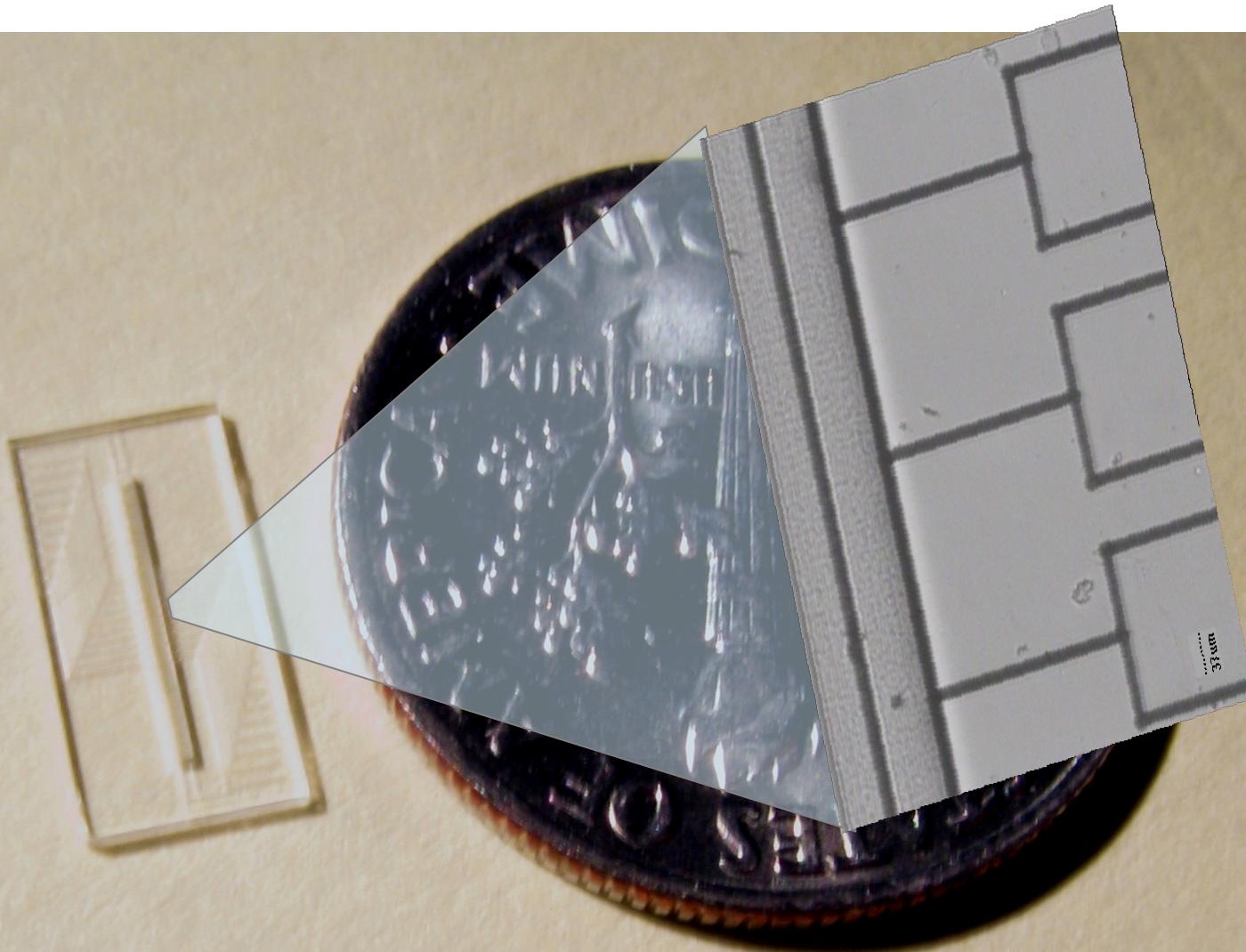


# Trenches cut and etched by Translume





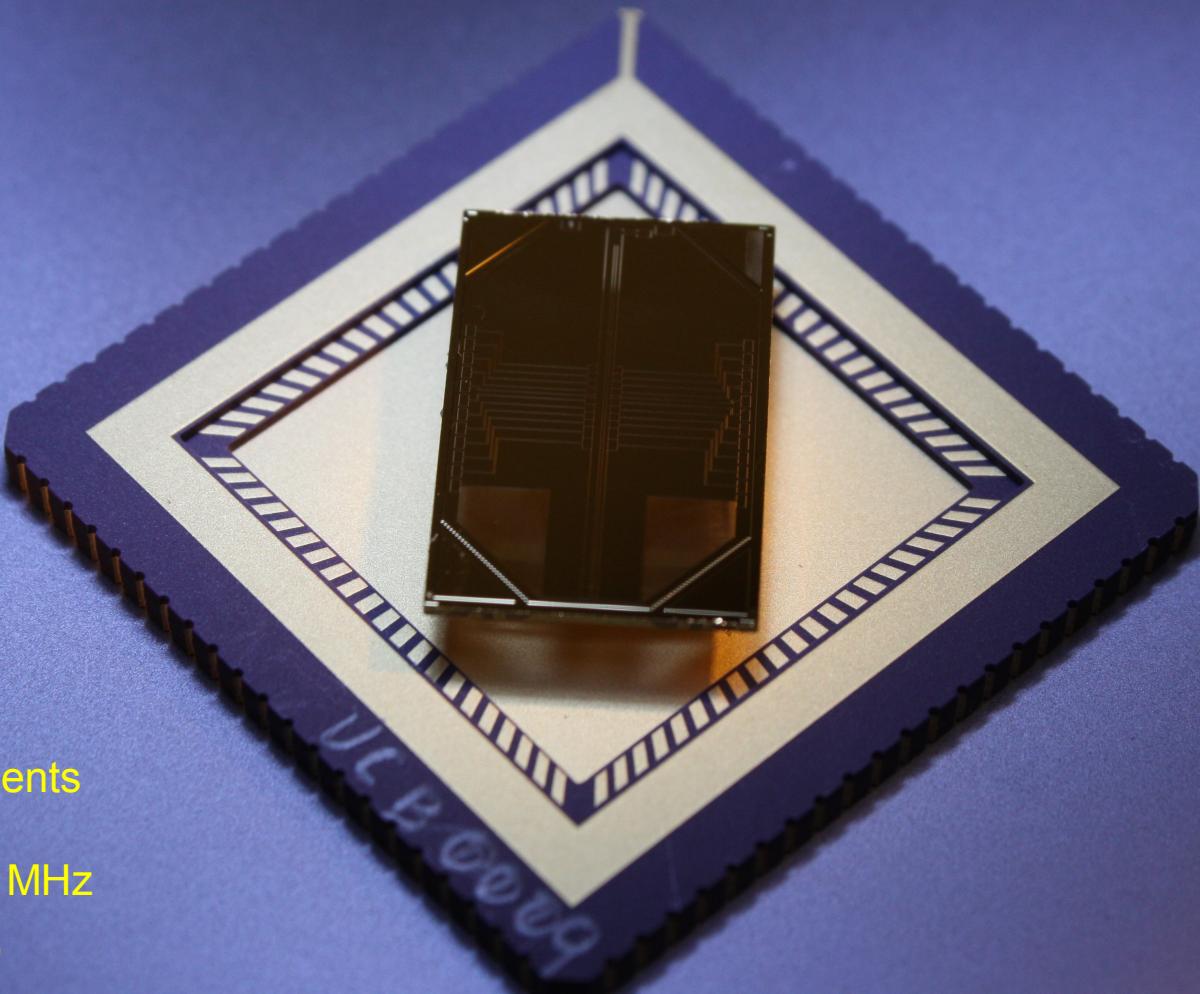
# Slit trap



Manufactured by Translume, Ann Arbor, MI



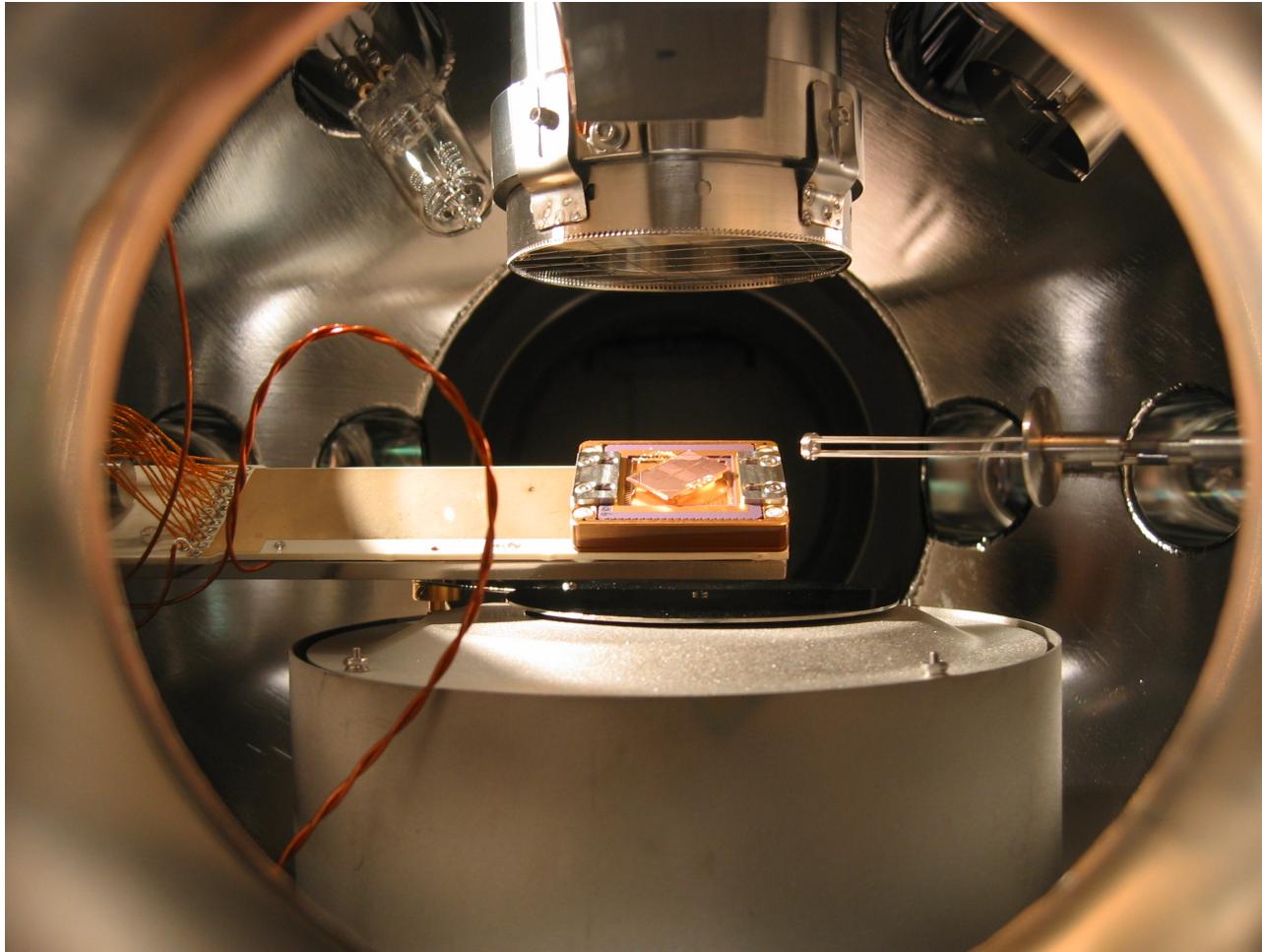
# Mounted trap



- 100  $\mu\text{m}$  height
- 3 mm axis
- 5  $\mu\text{m}$  gap
- 11 + 11 dc segments
- RF: 300 Vpp, 40 MHz
- ( $f_{\text{secular}} = 3 \text{ MHz}$ )

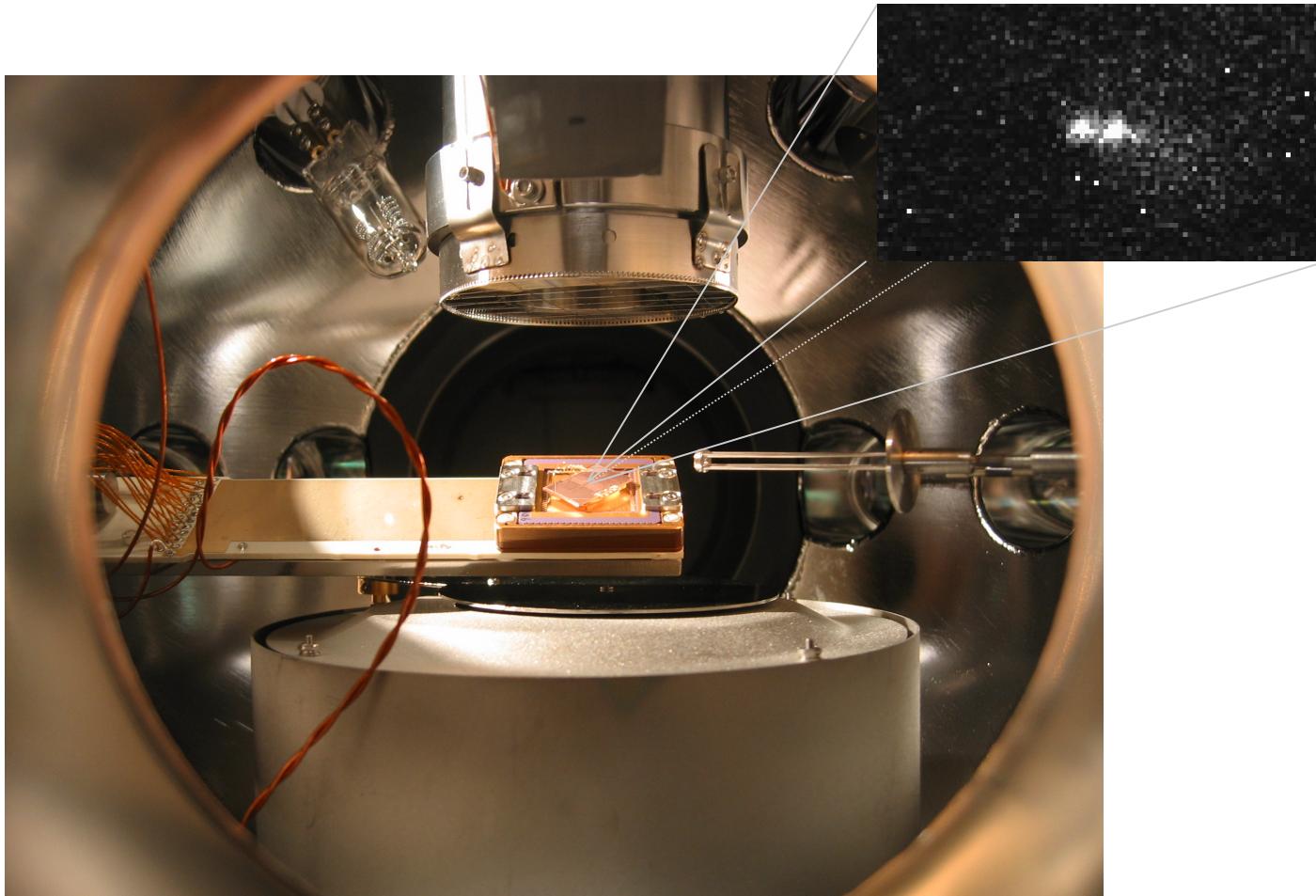


# Surface science chamber



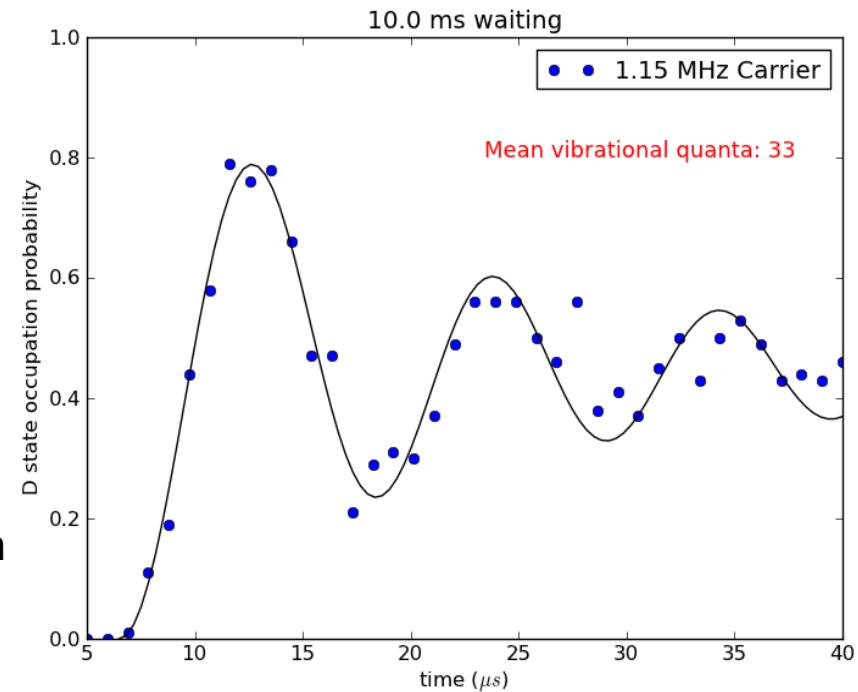
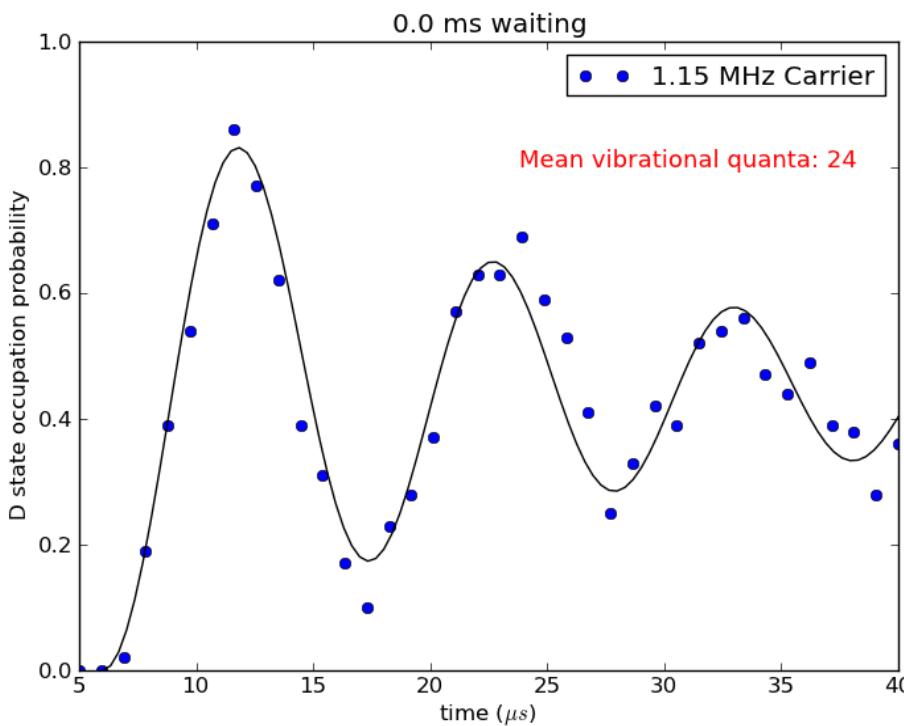


# Surface science chamber





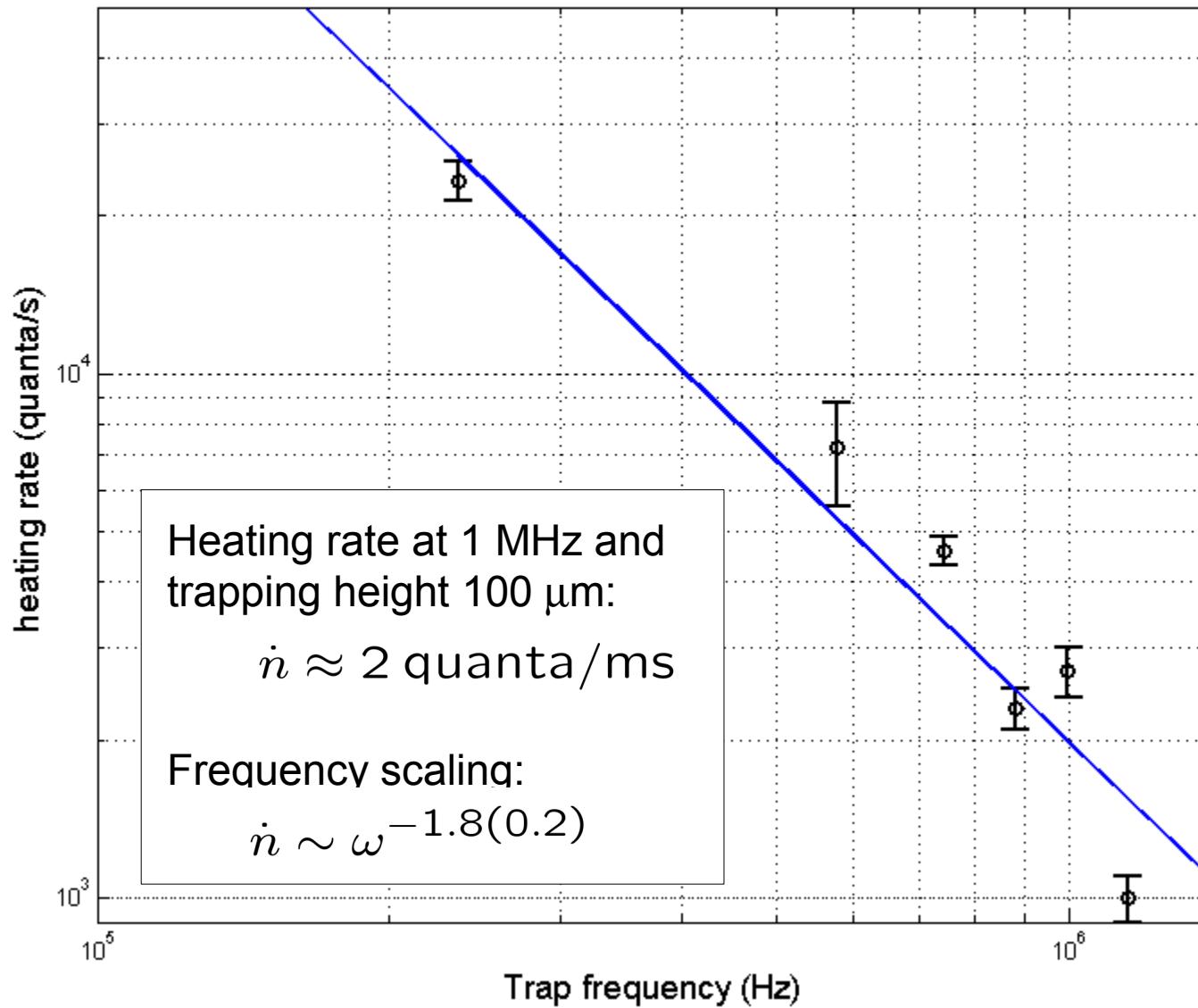
# Heating rate measurements



- Rabi flops on a quadrupole transition  
by laser stabilized to an  $\text{U}^+$  cavity

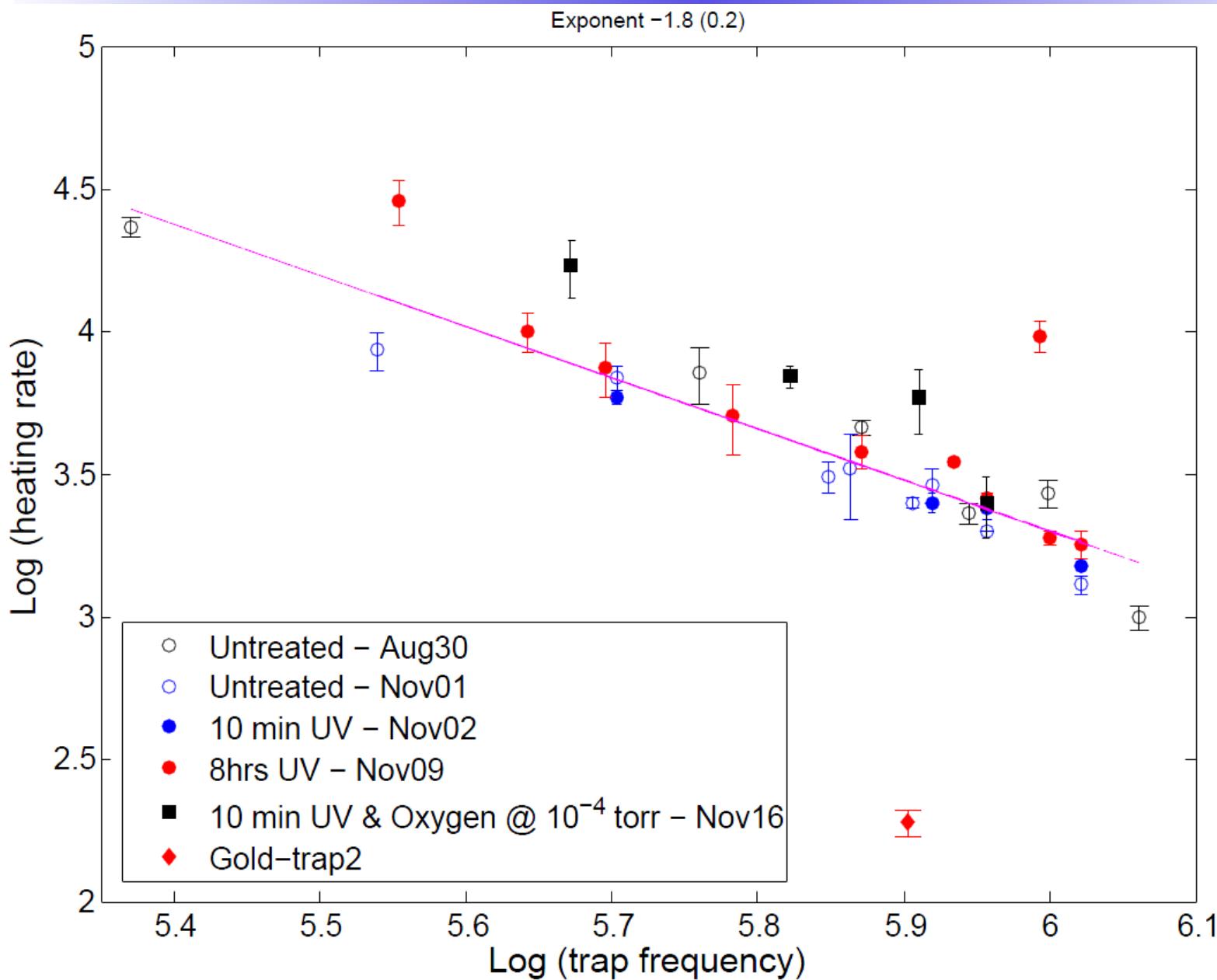


# Scaling of the heating rate



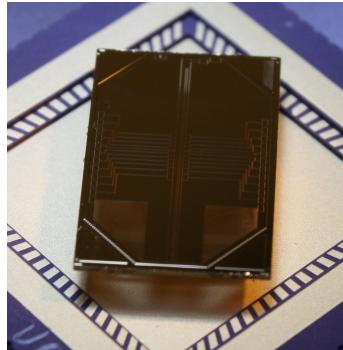


# Cleaning helps?

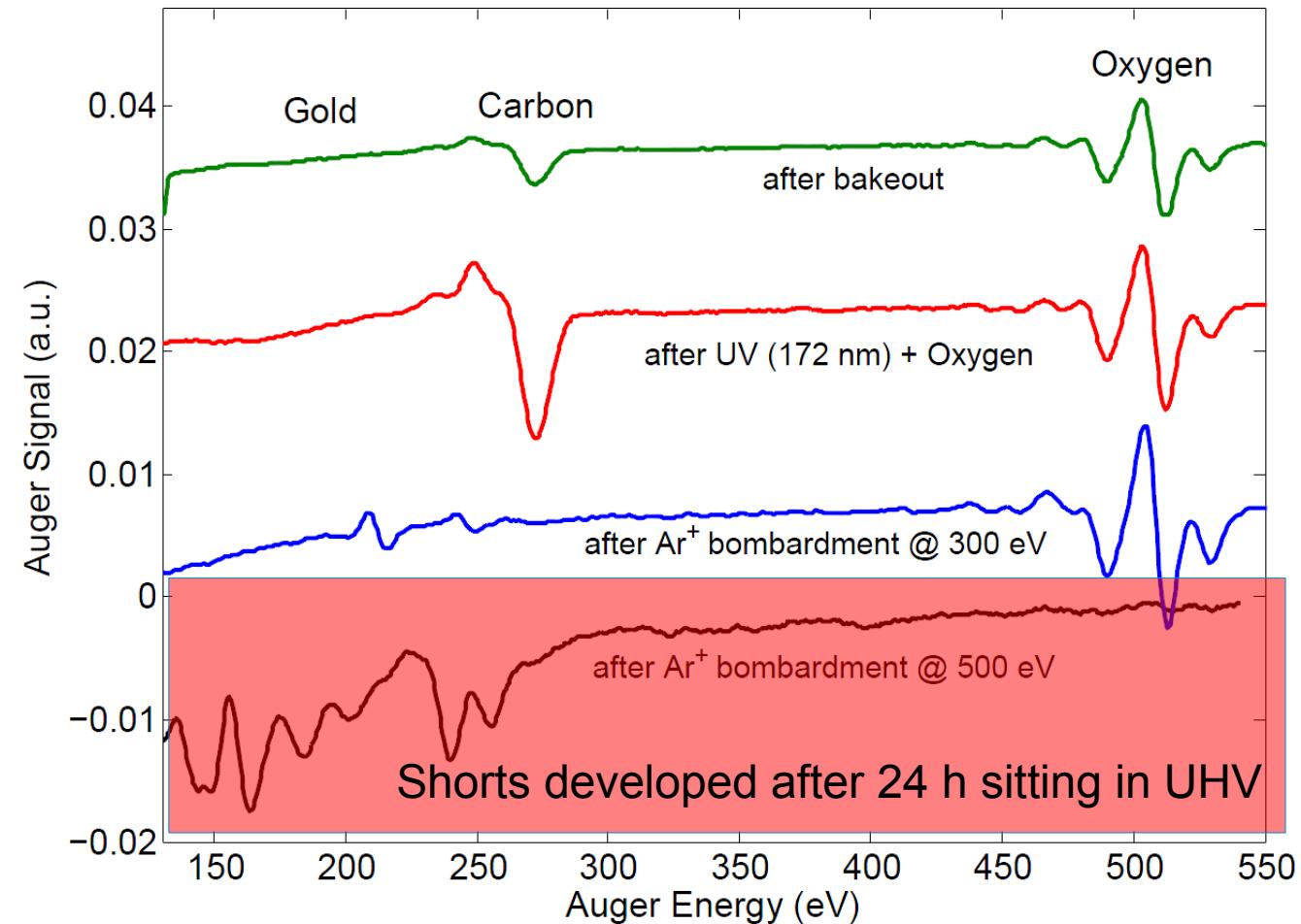




# Monitoring the cleaning of Au-trap



Auger-LEED unit

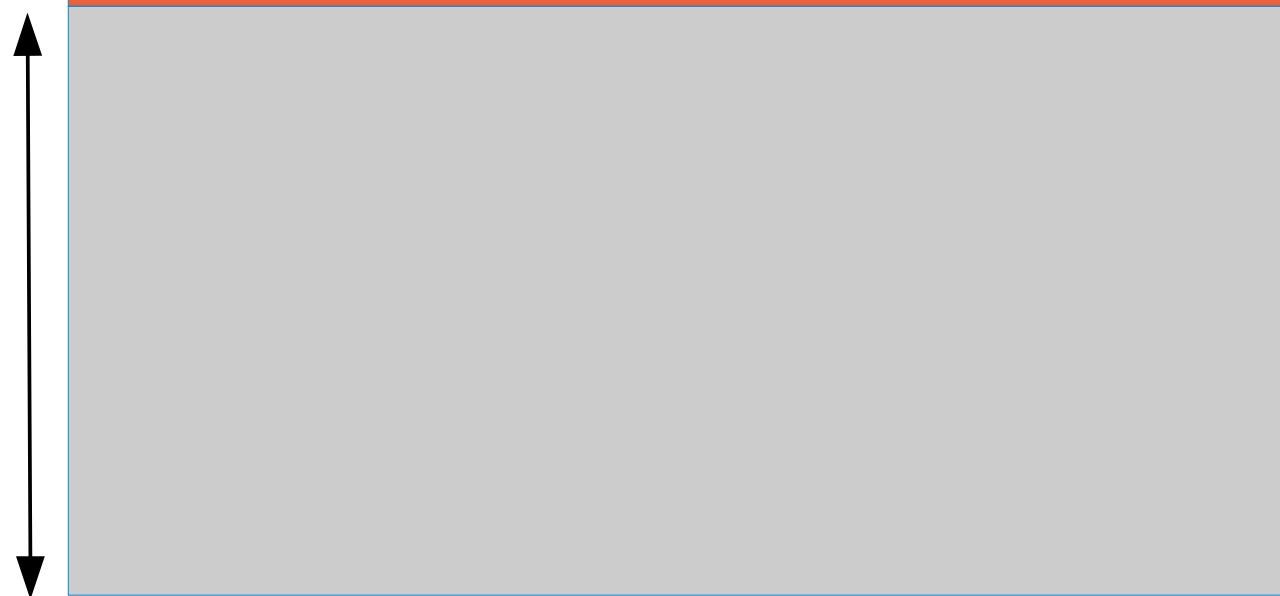




# Materials change

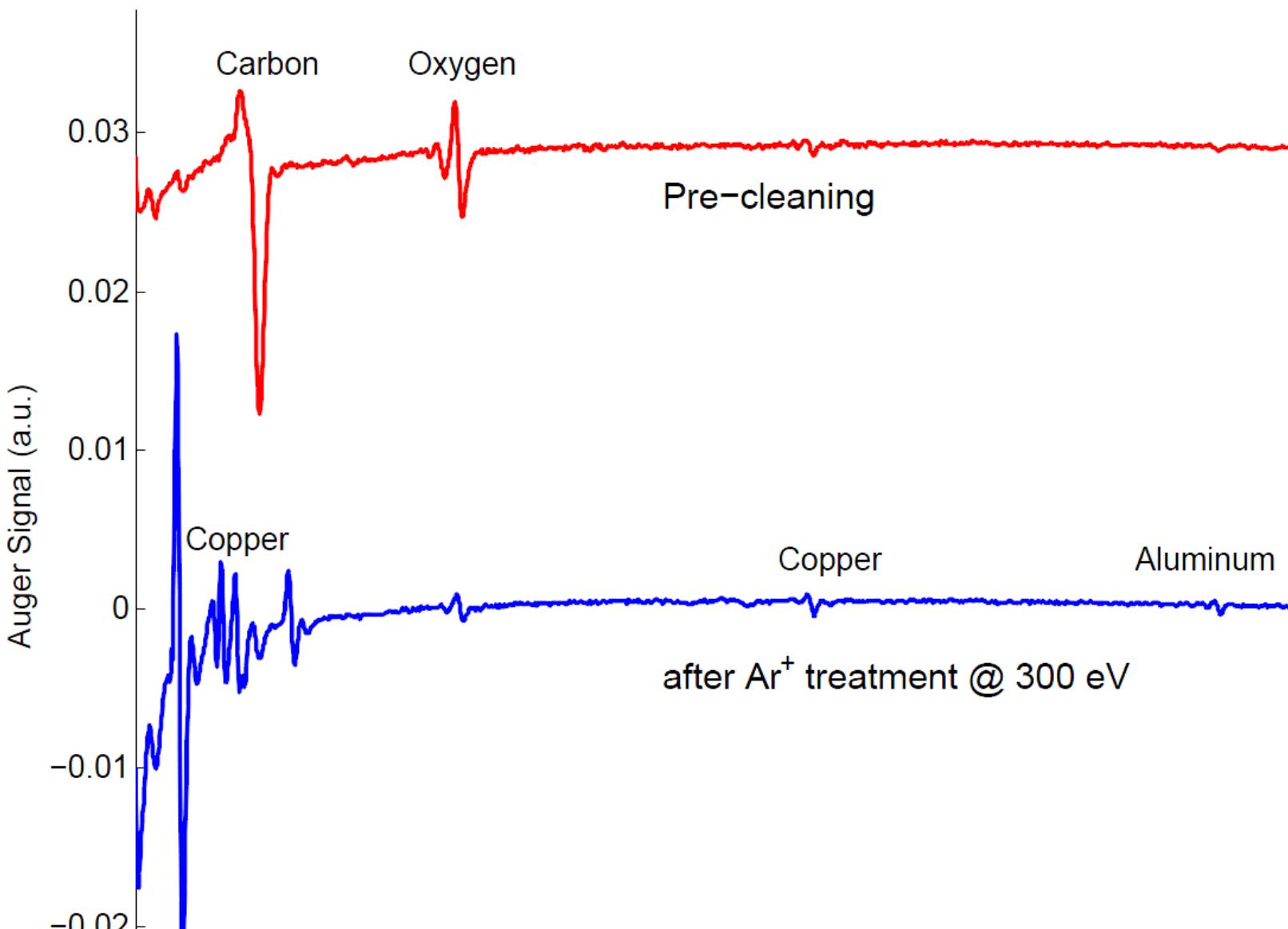
20 nm Cu

1  $\mu$ m Al



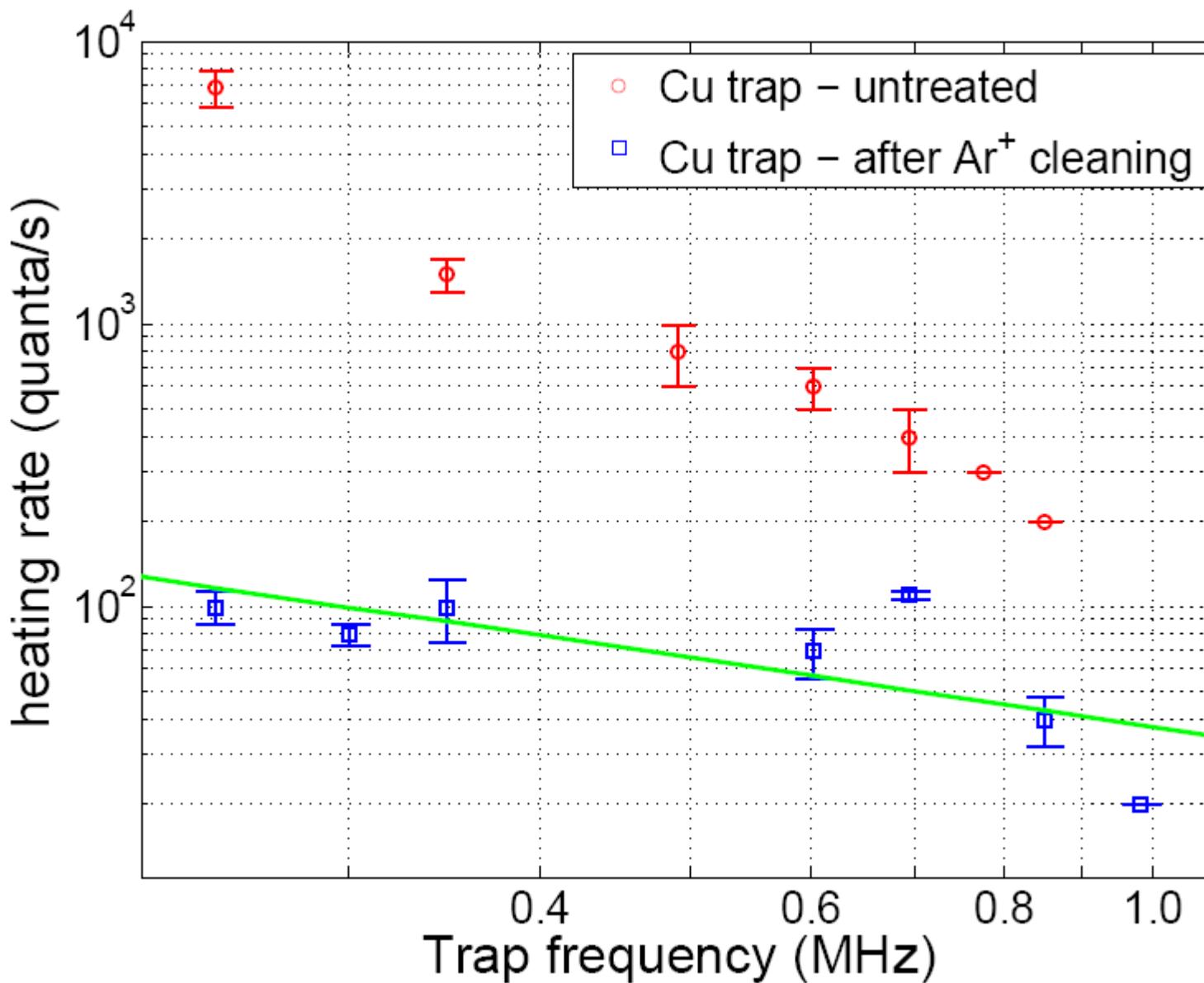


# Monitoring the cleaning





# Copper as a trap material





# Summary

