



# **EUV Projection Optics Lifetime**

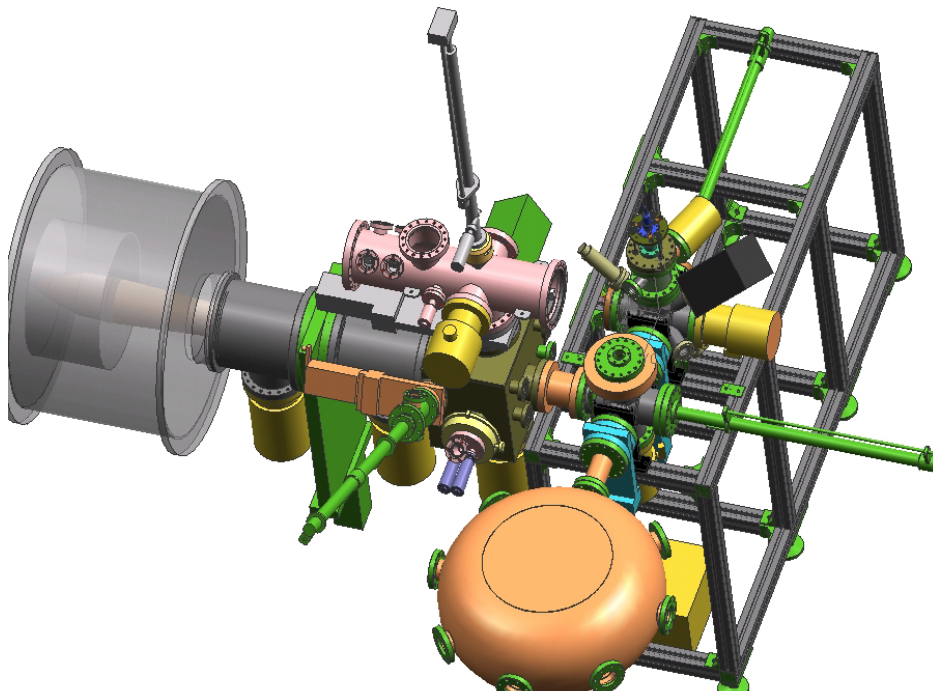
**European Regional Update**

# Integrated EUV optics lifetime testfacility

- Transport & storage
- measurement device
- surface modification

Storage

Load  
Lock



Lock

**System realisation on schedule; first light: Q2 2005**



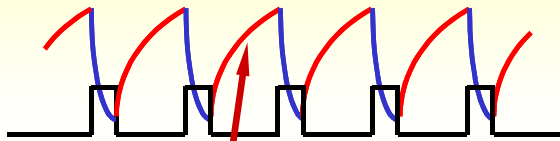
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# Differences between pulsed and continuous

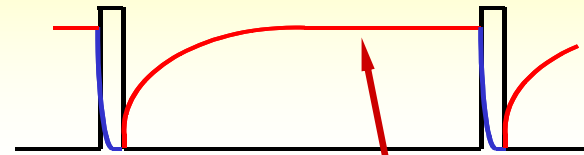
synchrotron: 1 – 500 MHz

- Adsorption of hydrocarbons
- Carbon formation (cracking)



Xe discharge: 1 – 10 kHz

- Adsorption of hydrocarbons
- Carbon formation (cracking)

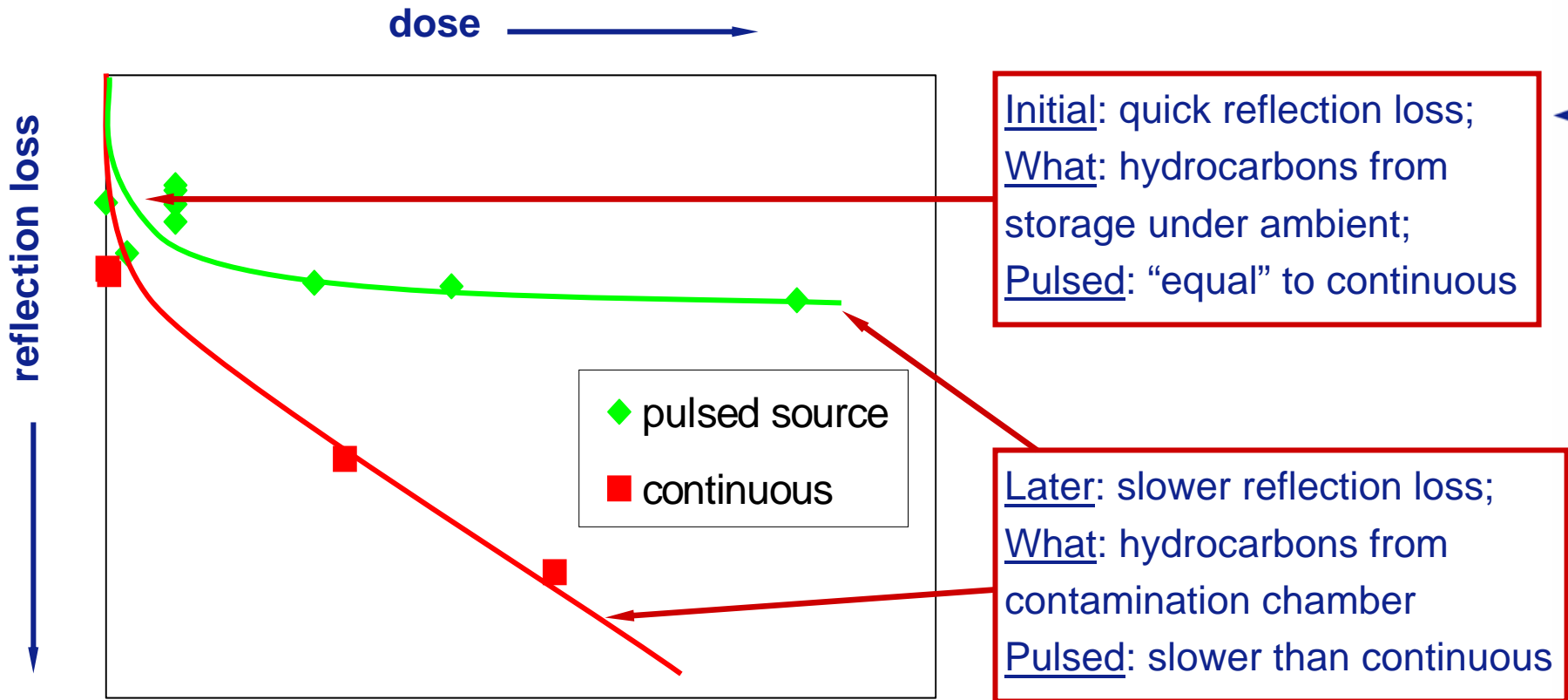


“Continuous”: hydrocarbon surface occupation not in equilibrium with pressure  
Stated otherwise: surface residence time longer than time between 2 pulses  
So: very few hydrocarbons can leave surface without seeing photons

Pulsed: hydrocarbon surface occupation in equilibrium with pressure;  
Stated otherwise: surface residence time shorter than time between 2 pulses  
So: many hydrocarbons can leave surface without seeing photons

# Progress since November 2004

- Differences are found between pulsed and continuous



# Progress since November 2004

- “Need to test as close as possible to the actual tool conditions”
- Next step closer to the actual tool: test plans ready to estimate actual tool behavior under EUV at tool subsystems
  - Source Collector module testing
  - Illuminator environment testing



# Conclusions

- Facilities for testing:
  - Realization of a dedicated test facility for ultimo alpha tests and HVM developments is on track for first light in Q2/05
- Progress:
  - Differences pulsed versus continuous confirmed
  - Testing progresses closer and closer to actual tool HW situations
- Activities inside Europe on track towards fulfilling optics lifetime specifications for both AD and HVM tools



# Acknowledgements

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**Thank you for your attention!!!**



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