

EUVL R&D Status - Europe



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What, Where?

- Ireland
 - UCD – LPP source development, diagnostics, spectroscopy & modelling. Irish government & EU funding. HHG in laser plasmas.
 - DCU – LPP source diagnostics
 - TCD – Magnetic stabilisation of LPP
- Switzerland
 - ETH Zurich – Sn LPP source, CoO, Debris
 - Adlyte Zurich (spin out) – source
 - Paul Scherrer Institute – Interference Lithography, making 12nm patterns.
 - University of Bern – EUV lasers for metrology
- Italy
 - University of L'Aquila & ENEA – DPP Sources, Kr gas XUV laser – Interference Lithography
 - Media Lario – collector optics



What, Where?

- France
 - CEA-LETI – Resist outgasing, Mask, Interferometry
 - CNRS – Mask, Resist
 - EPPRA – Z* modelling
 - NanoUV – Metrology source
- Germany
 - PTB, Berlin Germany – Mask
 - Fraunhofer– DPP, Collectors, Optics
 - Carl Zeiss – Optics
- The Netherlands
 - Delft –Mask
 - TU Eindhoven – Debris, Optics
 - FOM – Metrology, Optics – pm coatings
 - ASML – Using Cymer LPP source for B-tool



What, Where?

- Russia
 - ISAN– Spectroscopy & Diagnostic Instrumentation, Debris Studies
 - Keldysh Institute – Spectroscopy, Debris
 - TRINITI – Source Concepts
 - RAS Troitsk – EUV Spectroscopy – 6.5 nm
- KTH, Sweden – LPP droplet source
- CTU Prague – Czech Rep. – Optics
- UK – Powerlase has closed



UCD update

- Collaborations
 - Dublin City University – LPP diagnostics & source development
 - Trinity College Dublin – DPP enhancement
- \approx 30 researchers incl. 12 PhD students
- 2.5 years funding under current projects (2 M€)
- Liquid optic for EUV under development
- Metrology source work commencing
- 6.5 nm (& other λ) work ongoing

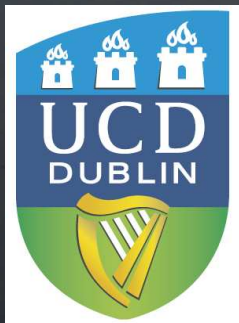




Trends in University Research

- Leveraging EUVL research
 - “Water Window” sources @ 2.3 – 4.4 nm
 - Materials & surface science
 - Surface preparation for bio science – lithography
 - X-ray & γ -ray grazing incidence optics
 - Data encryption via LiF & EUV
 - EUV microscopy
 - LIBS – Laser Induced Breakdown Spectroscopy

Thank You



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