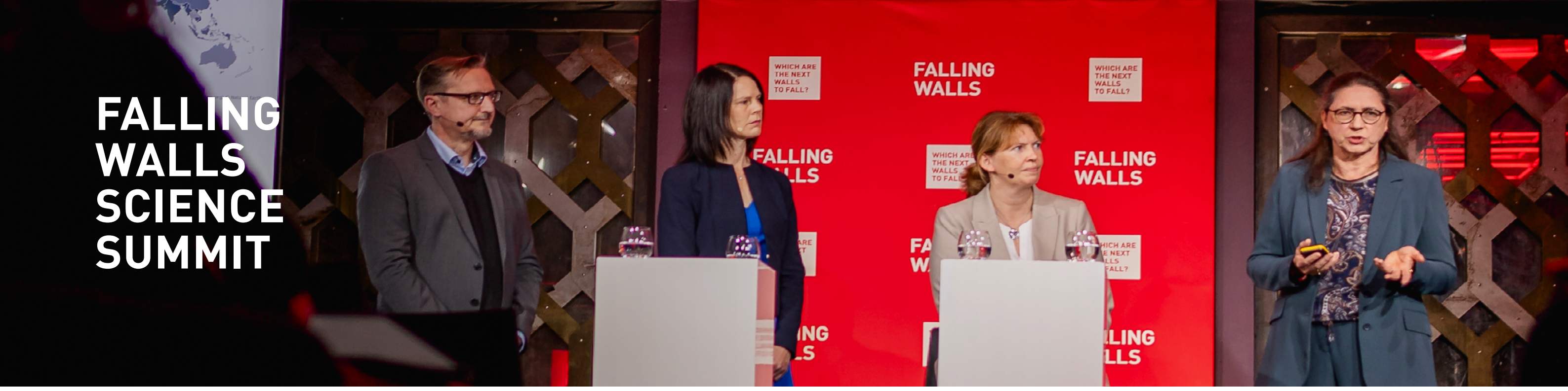

Berthold Leibinger Stiftung

KEY RESULTS OF THE IMPACT DIALOGUE

"DEEP UV INNOVATION: SHAPING THE FUTURE OF PHOTONICS"

— Semiconductor UV is moving from lab demo to clinical tool and a backbone for quantum tech.

Quantum systems need reliable deep-UV control, and healthcare is searching for safe, chemical-free antimicrobial solutions while mercury lamps are being phased out. Now is the time to scale efficient UVC LEDs, crack electrically driven deep-UV lasers, build UV-capable integrated photonics, and fast-track deep-UVC clinical adoption.

Deep-ultraviolet light (≈100-400 nm) carries enough energy to break chemical bonds, enabling disinfection or help with precision metrology. LEDs with their broad and incoherent emission already serve illumination-type uses such as curing and surface decontamination. Lasers with their narrow and coherent beams unlock lithography, spectroscopy, interferometry and high-speed modulation. In parallel, deep-UVC at ~222–233 nm shows strong antimicrobial efficacy with tissue-sparing penetration positioning it for controlled medical use. Trapped-ion clocks and processors demand robust deep-UV sources and on-chip routing with dramatically lower optical losses where lasers come into play.

THE PANEL CALL TO ACTION:

1 — Scale UVC LED manufacturing to replace mercury lamps.
Grow Al(Ga)N devices on larger wafers, optimise UV-specific packaging and drive volume to collapse the cost gap (currently ≈100x per watt versus blue LEDs) so LEDs become the default in disinfection, curing and sensing.

2 — De-risk far-UVC in healthcare with regulated pilots and dose standards.
Start in controlled indications (e.g., MRSA decolonisation, chronic-wound management, surgical-site antisepsis), set device-class pathways under MDR, and use clinical data to address safety perceptions while defining exposure protocols and eyewear norms.

3 — Accelerate electrically driven deep-UV semiconductor lasers through cross-disciplinary consortia.
Combine materials advances (low-defect mirrors, improved p-/n-type conductivity, high-quality resonators) with device physics to move from optically pumped prototypes to compact, efficient edge-emitters and surface-emitters.

4 — Build a UV-ready integrated photonics stack for quantum systems.
Open access to high-resolution optical lithography (~100 nm) and develop low-loss blue-to-DUV waveguides (target <0.1 dB/cm) so light can be conditioned and distributed on-chip for clocks, sensors and scalable trapped-ion processors.

This event is supported by Berthold Leibinger Foundation and assembled in the framework of the Falling Walls Science Summit 2025 in Berlin. The Falling Walls Science Summit is a leading international, interdisciplinary, and intersectoral forum for scientific breakthroughs. It commemorates the fall of the Berlin Wall and aims to promote dialogue between science and society.

PANELLISTS

Åsa Haglund
Full Professor, Photonics, Microtechnology and Nanoscience, Chalmers University of Technology

Tanja Mehlstäubler
Professor, Physikalisch-Technische Bundesanstalt

Martina Meinke
Head of the Department of Experimental Skin Physiology, Charité

Michael Kneissl
Professor, Chair of Experimental Nanophysics & Photonics, Technische Universität Berlin, Moderator

CONTACT

Falling Walls Foundation gGmbH
Kochstraße 6–7
10969 Berlin
Web: www.falling-walls.com

PARTNER REQUEST
Dr. Andreas Kosmider
Managing Director
andreas.kosmider@falling-walls.com
Phone: +49 30 609 883 97 28
Mobile: +49 172 273 75 77

PRESS REQUEST
Felix Mihalek
PR Manager
phone: +49 30 60 988 39 780
mail: felix.mihalek@falling-walls.com

fallingwalls
falling walls
FallingWallsFoundation
falling-walls-foundation