

# Curriculum Vitae

## Dr. Karl Schulmeister

Laser and Optical Broadband Radiation Safety Expert

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[LinkedIn](#) | [Google Scholar](#) | [ResearchGate](#)

<https://laser-led-lamp-safety.seibersdorf-laboratories.at/ueberuns>

## Professional Profile

Internationally recognised expert in **laser and optical broadband radiation safety**, with over 30 years of experience in biophysical effects of optical radiation, risk assessment, and international safety standardisation. Dr. Schulmeister has contributed extensively to the development of global laser safety standards and exposure limits and serves as advisor to industry, regulatory bodies, and international organisations.

He is co-author of the reference handbook “**Laser Safety**” and author or co-author of **over 100 scientific publications** in the field of laser radiation hazards, bioeffects, and exposure limits.

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## Consulting Services

Dr. Schulmeister provides consulting services for industry, research institutions, and regulatory bodies in the areas of:

- Laser and optical broadband radiation safety, particularly on product safety standards IEC 60825-1, IEC 62471 series and ISO 15004-2.
- Risk assessment and hazard evaluation based on injury thresholds.
- Application of international safety standards (IEC, ISO, CIE, ANSI).

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## Professional Experience

### Head / Senior Expert – Laser, LED and Lamp Safety

Seibersdorf Labor GmbH, Austria | 1994 – Present

Established the Laser, LED and Lamp Safety department as an ISO 17025 **accredited test house**, providing testing and consulting services based on a combination of **standardisation work and bioeffects research**, supporting industry in safety evaluation of complex and novel radiation sources.

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## Education

Vienna University of Technology, Austria  
Dr. techn., Biophysics | 2001

Vienna University of Technology, Austria  
Dipl.-Ing., Physics | 1992

Trinity College Dublin, Ireland  
M.Sc., Computer Modelling | 1994

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## International Standardisation and Scientific Committees

### International Electrotechnical Commission (IEC)

- Secretary, **IEC TC76 Working Group 1** – Responsible for IEC 60825-1 (Safety of Laser Products) since 1996
- Project Leader – Development and revision of IEC 60825-1
- Expert member – Development of IEC 62471-5 and IEC 62471-7 (photobiological safety of lamps, image projectors and luminaires)

### International Commission on Illumination (CIE)

- Associate Division Director, Division 6 “Photobiology” from 2002 - 2018
- Co-author – **CIE S009 / IEC 62471** on photobiological safety

### ISO TC 172/SC7/ WG6 “Ophthalmic instruments and test methods”

- Expert member – Update of ISO 15004-2 on the photobiological safety of ophthalmic instruments

### ANSI Laser Safety Committee (USA)

- Member – ANSI Z136 Technical Subcommittee on Bioeffects

### International Commission on Non-Ionizing Radiation Protection (ICNIRP)

- Member – Scientific Expert Group on optical radiation exposure limits
- Previously served on ICNIRP Standing Committee on Optical Radiation and on the ICNIRP Main Commission

These roles involve development of internationally recognised exposure limits and safety standards for laser and optical broadband radiation.

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## Research Focus and Scientific Contributions

Dr. Schulmeister's research provides the scientific foundation for international exposure limits and safety standards:

- Biological effects of laser radiation on the **eye and skin**
  - Experimental and modelling approaches to determine **injury thresholds**
  - Development of **ex-vivo and computational models** for predicting laser-induced damage
  - Evaluation of **spot size and multiple pulse effects** in retinal injury mechanisms
  - Safety standards development and hazard classification methodologies
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## Publications

**Co-author:** *Laser Safety* (CRC Press), internationally recognised reference book in laser safety engineering.

Author or co-author of **100+ scientific publications** in photobiology, radiation protection, and laser safety standards.

<https://laser-led-lamp-safety.seibersdorf-laboratories.at/downloads>

Selected Publication Topics:

- Laser-induced retinal and corneal injury thresholds
  - UV radiation biological effects
  - Exposure limits for optical radiation
  - Safety standards and hazard classification
  - Product safety assessment methodologies
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## Professional Recognition & Awards

- **Fellow**, Laser Institute of America (LIA)
  - **IEC 1906 Awards** for outstanding contributions to international standardisation activities in laser safety | 2007 and 2024
  - **Rockwell Educational Achievement Award**  
Issued by the LIA | 2015
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