

# Curriculum vitae



## Dr Christoph Bollig

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Born 30.10.1967 in Aachen

### PROFESSIONAL EXPERIENCE

CEO Abacus Laser	11/2014 to date	Consultancy, contract research and development of OEM products for laser and atmospheric remote sensing applications.
Consultant and Researcher	05/2013 to date	LISA laser products OHG As consultant and part-time employee I solve problems in research and development as well as in existing laser products. I also consult on strategic issues.
Scientific Employee	04/2011 – 04/2013	Carl von Ossietzky University Oldenburg As a scientific employee in the Maritime Physics Research Group I was responsible for the development of a system for remote wind measurement (lidar) that will be used for the predictive control of wind turbines. Within a short period of time wind measurements could be demonstrated up to a distance of 1,5 km with a system based on a fibre laser that was specifically developed by me for this application.
Chief Laser Scientist, Research Group Leader	02/2006 – 03/2011	National Laser Centre, CSIR, Pretoria, South Africa At the National Laser Centre (NLC) I was head of the Laser Systems Research Group that worked on the development of solid-state lasers as well as on atmospheric remote sensing (LIDAR). With its 13 employees (including ten permanent employees, one doctoral and one masters student), this research group, which had been established in 2007, was the biggest group of the National Laser Centre when I left. 65% of the budget of the research group consisted of external funds. In 2009 we successfully concluded a research project for a leading European laser manufacturer. Other international projects followed. The research concentrated on the following areas: <ul style="list-style-type: none"><li>• 2 <math>\mu\text{m}</math> Tm and Ho lasers with high power and pulse energy</li><li>• Single-frequency operation and electronic control of lasers</li><li>• Conversion to the mid-IR spectral range (3 to 5 <math>\mu\text{m}</math>)</li><li>• Thermal effects in laser crystals</li><li>• Mobile backscatter LIDAR up to a height of 40 km</li></ul> Our research resulted in a significant improvement of the performance of 2 $\mu\text{m}$ lasers, e.g. the tripling of the initial performance of continuous Tm slab lasers to 225 W and the scaling of a Q-switched single-frequency TEM <sub>00</sub> Ho:YLF MOPA to 330 mJ per pulse. This led to a range of publications in renowned journals, to four invited talks at important international conferences as well as to a number of prestigious awards.

Laser Scientist	03/2001 – 01/2006	<p>Laser Research Institute, University of Stellenbosch, South Africa</p> <p>At the Laser Research Institute (LRI) I established a completely new research group in the field of diode-pumped solid-state lasers. This included the time-consuming establishment and fitting of a new laser laboratory on a low budget, the acquisition of new projects and the recruitment and training of talented students. At the end six masters and doctoral students were working in the group.</p> <p>The research group was financed almost exclusively by external funds, both by research projects and by public programmes. The focus of our research was in the area of power scaling of end-pumped Nd:YLF lasers, at both 1053 and 1314 nm. This work led to an invited talk at CLEO/Europe 2005.</p>
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Junior Scientist	11/1997 – 10/2000	<p>Lidar Research Group, German Aerospace Center (DLR), Oberpfaffenhofen</p> <p>At the DLR I was responsible for the establishment and running of a 2 µm wind Lidar. The system with a measuring range of a few kilometres was utilised within the framework of an EU project on the detection of wake vortices by commercial aircraft and was successfully tested at Toulouse Airport.</p>
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**EDUCATION**

Doctoral studies	10/1993 – 10/1997	<p>Optoelectronics Research Centre (ORC), University of Southampton</p> <p>Title of dissertation: "Single-Frequency Diode-Pumped Solid-State Lasers" Supervisor: Prof. David Hanna</p> <p><i>At this time the ORC was the world's second-largest optoelectronics research centre after Bell Laboratories of AT&amp;T in the USA</i></p>
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Postgraduate Studies in Physics	10/1991 – 09/1993	<p>Ruprecht Karls University of Heidelberg</p> <p>Elective subjects: Physiology and Medicinal Optics</p> <p><i>As a "Diplom" project a masters project was started at the ORC in Southampton that, on the grounds of its complexity, culminated directly in a doctorate.</i></p>
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Undergraduate Studies in Physics	10/1989 – 09/1991	<p>RWTH Aachen</p> <p>Parallel: One year of studies in medicine and political sciences</p>
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**AWARDS**

*DLR: Three-month sabbatical at NASA Goddard and the University of the Witwatersrand*

*University of Stellenbosch: Prestigious Post-Doc Fellowship of the National Research Foundation*

*National Laser Centre: Best Established Scientist Award 2010*

*CSIR: Certificate of Achievement on the promotion to Chief Researcher (2010)*

*CSIR: Outstanding Contribution by a Team 2009/10 for the mid-IR team under my leadership*

*National Laser Centre: Best Team Award 2009 for the mid-IR laser team under my leadership*

*National Laser Centre: Best Team Award 2008 for the Lidar team under my leadership*

*National Laser Centre: Various awards for staff members reporting to me (best scientist, best young researcher, twice best student, best technician)*

*Various awards for publications by students supervised by me*

**PUBLICATIONS**

22 articles in peer-reviewed scientific journals (in 6 of these as first author)

53 presentations at international conferences (of these were 6 invited talks)

67 presentations at national conferences

43 seminar presentations and external colloquia in 9 countries