Working at Carl Zeiss Meditec AG

R&D Optical Engineer for Intraocular Lenses

Dr. Friedrich Kirchner
Team Leader Optical Design

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I studied Physics at Humboldt-University Berlin, spent some time abroad and did my PhD at LMU and MPQ in Munich.

Studies of Physics at Humboldt-University Berlin

- Focus on optics
- DAAD Studies at the University of British Columbia, Vancouver, Canada
- Diplom thesis with Prof. Markus Raschke (previously at Max-Born-Institute) at the University of Washington, Seattle, USA

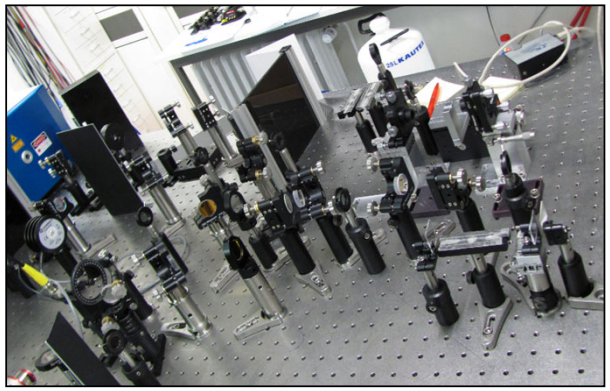
Diplom thesis:
Generation of femtosecond midinfrared transients and detection by electrooptic sampling

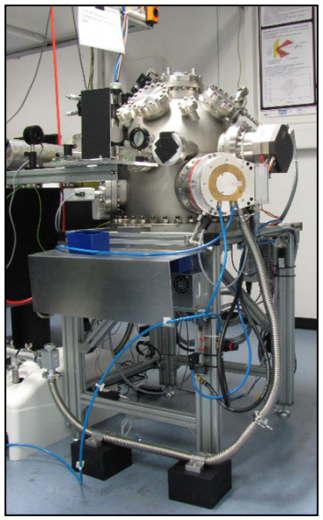
PhD work with Prof. Ferenc Krausz at Ludwig-Maximilians-University Munich and Max-Planck-Institute for Quantum Optics

- Generation of fs single electron pulses
- Investigation of their coherence properties
- Streaking of keV fs electron pulses

<u>Tools:</u>

- Femtosecond Ti:Sa (long cavity) oscillator
- High voltage and ultrahigh vacuum





PhD thesis:
Ultrashort and coherent single-electron pulses for diffraction at ultimate resolutions

Back to the roots…

… with some unfinished business and a lot to learn

Munich → Berlin

LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

ZEISS

Seeing beyond

ZEISS **Worldwide**

Employees

35,375

Locations worldwide (rounded)

100

Countries (rounded)

50

Headquarters:
Oberkochen, Germany

Berlin: ~350 employees ↗

Investments in **Research & Development**

Innovations shape the future: Research and development teams at ZEISS are working hard to constantly expand our role as technology leader and market shaper. ZEISS has been making sustainable investments in R&D in order to achieve this goal.

New patent applications

500

R&D investments in € million

943

Investment by % of revenue

13%

I love working in Medical Technology because my work (eventually) improves the life of patients.

ZEISS Segments

Semiconductor Manufacturing Technology

2.298 € billion in revenue

5,211 employees

Industrial Quality & Research

1.801 € billion in revenue

7,363 employees

Medical Technology

1.951 € billion in revenue

5,866 employees

Consumer Markets

1.394 € billion in revenue

12,721 employees

In Berlin, ZEISS develops and produces Intraocular Lenses (IOLs).

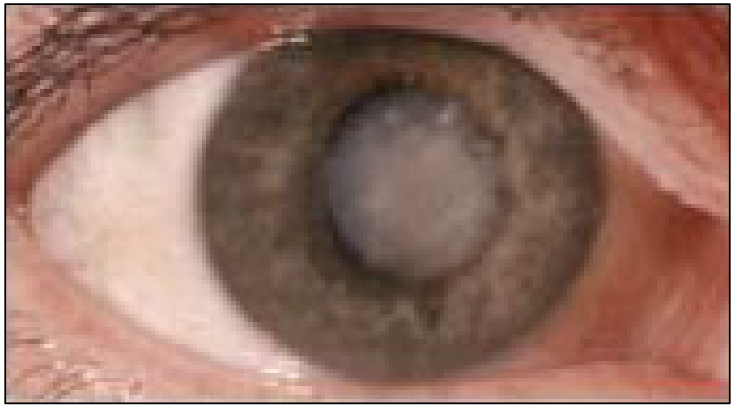
At a certain age, every eye will develop a cataract and need an IOL.

Cataract: Clouding of the natural crystalline lens mostly due to age (roughly starting between ages 60 and 70)

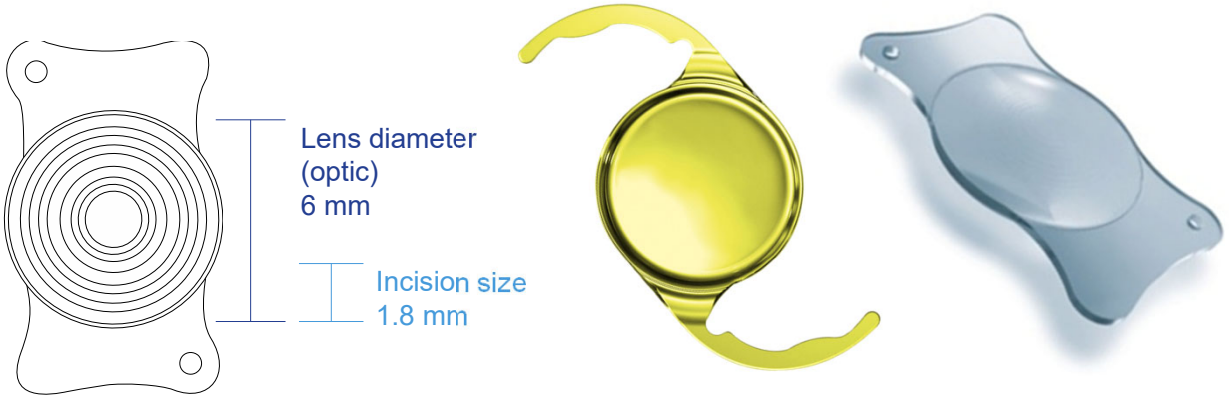
Surgery: The clouded natural eye lens is removed during ambulant surgery (~20 min.).

Intraocular lens: Artificial lens replacing the natural one after its removal; IOL optics can be aspheric, diffractive, freeform, …

About 800 000 cataract surgeries are performed in Germany each year.



Eye lens clouded by cataract

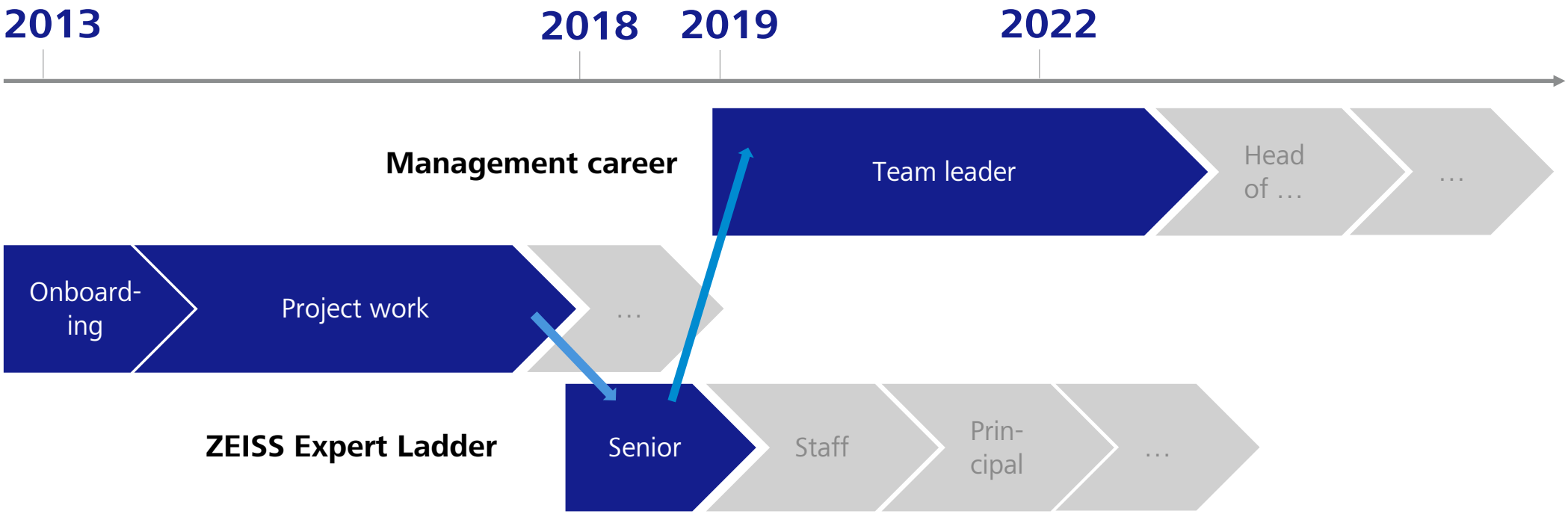


1.8 millimeters

Using an incision of 1.8 millimeters, a ZEISS intraocular lens can be implanted into the eye.

ZEISS offers different career paths.

This is my career at ZEISS so far.



- Learning ZEMAX
- Visits to doctors / surgeries
- Knowledge transfer about IOL Design
- Learning about regulations

- Work in standardization committees (DIN, ISO)
- Participation in conferences

- First Leadership Experience program

Work in an R&D department is not so different from PhD work, but it is much more structured / monitored / success-oriented.

- Interdisciplinary R&D team (~40 team members)
- Work with colleagues from France, the USA, and China

- Optical design (ZEMAX)
- Basic programming (Mathematica, ZEMAX Programming Language)
- Data analysis
- Presentations

- Interaction with doctors and sales force (communication of complicated topics in an understandable manner)
- Preparation of clinical studies

- Work in projects with dedicated project manager and small team

- Patents
- Inventions

- General problem solving

- Research of scientific literature

- Occasional business travel

- **Leading a team of 5 optical engineers (Physicists and Optometrists)**

If this sound appealing to you, your application is welcome.
Open positions

- Go to www.zeiss.com → Careers
- Don’t be scared by the job title, try to look for overlap with what you have done.

Prozessentwickler für medizinische Verfahren (m/w/x)

Ihr Profil
- wissenschaftlich-technisches Diplom-/Masterstudium (z.B. **Natur- oder Ingenieurwissenschaften**, Mathematik); eine **Promotion** ist wünschenswert
- erste Berufserfahrung und Kenntnisse zu spezifischen ophthalmologischen Verfahren und zugehöriger Gerätetechnik und/oder Kenntnisse im Bereich der **Konzeption und Entwicklung von Laserverfahren**
- **Kenntnisse in numerischen Verfahren** sowie in der Implementierung numerischer Berechnungen und in der Datenvisualisierung
- Erfahrung in der Arbeit mit statistischen Analysemethoden
- verhandlungssichere Sprachkenntnisse in **Englisch**
- **kreative und innovative Arbeitsweise, Teamgeist und Durchsetzungsstärke**

Systems Engineer - Medizintechnik (m/w/x)

Ihr Profil
- erfolgreich abgeschlossenes wissenschaftlich-technisches Studium (z.B. **Master in Physik**, Medizintechnik, **Elektrotechnik**, Maschinenbau) oder eine vergleichbare Qualifikation
- mindestens 2 Jahre einschlägige Berufserfahrung in der Entwicklung von Geräten oder **Promotion**; Erfahrungen in der Medizintechnik sind vorteilhaft
- **praktische Erfahrung in der Arbeit mit Lasern der Klasse 3 oder 4 (z.B. Ultrakurzpulslaser)** sowie **Kenntnisse zu Fehleranalysen bei komplexen technischen Systemen**
- verhandlungssichere **Englischkenntnisse**; gute Deutschkenntnisse von Vorteil
- **HandsOn-Mentalität**, eine **gewissenhafte Arbeitsweise** sowie **Spaß an der Arbeit im Team**

Let’s keep in touch!

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Position: Team Leader Optical Design

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Seeing beyond