BE PASSIONATE ABOUT SCIENCE
AND STILL DRIVE THE ECONOMY
FORWARD. POSSIBLE?

YES.

At Fraunhofer, bridging this gap is the key
to our success. Only pioneers can engineer the
future.
www.fraunhofer.de/career
Joseph von Fraunhofer (1787 – 1826)

**Researcher**
- Discovery of the »Fraunhofer lines« in the solar spectrum

**Inventor**
- New methods for processing lenses

**Entrepreneur**
- Director and partner in a glassworks
The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society.

- **28,000 staff**
- **74 institutes and research units**
- **€2.8 billion**
  - Major infrastructure capital expenditure and defense research
  - Almost 30% is contributed by the German federal and states Governments
- **€2,3 billion**
  - Finance volume
  - Contract Research
  - 2019
  - More than 70% is derived from contracts with industry and from publicly financed research projects.
Fraunhofer-Gesellschaft Worldwide

- 8 Affiliates
- 16 Center
- 12 Project Center
- 10 ICON
- 6 Representative Offices + BRU
- 7 Senior Advisor
Fraunhofer Subsidiary's and Center in Europe

**Fraunhofer Austria Research**
- Geschäftsbericht Produktions- und Logistikmanagement, Vienna
- Geschäftsbericht Visual Computing, Graz

**Fraunhofer Italia Research**
- Fraunhofer Innovation Engineering Center IEC, Bolzano

**Fraunhofer Portugal Research**
- Fraunhofer Center for Assistive Information and Communication Solutions AICOS, Porto

**Fraunhofer Chalmers Centrum**
- Fraunhofer Chalmers Research Center for Industrial Mathematics FCC, Gothenburg

**Fraunhofer UK Research**
- Fraunhofer Centre for Applied Photonics CAP, Glasgow

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German Research Landscape

Mission

Application-oriented research

Research and Teaching

Programme research and Infrastructur

Knowledge transfer and application oriented basic research

Basic research

Basics
Fraunhofer fields of research

- Health and Environment
- Communication and Knowledge
- Production and Supply of Services
- Energy and Resources
- Mobility and Transport
- Security and Protection
Institutes working in related subject areas cooperate in Fraunhofer Groups and foster a joint presence on the R&D market. They help to define the Fraunhofer-Gesellschaft’s business policy and act to implement the organizational and funding principles of the Fraunhofer model.

- Innovation Research
- Information and Communication Technology
- Life Sciences
- Light & Surfaces
- Microelectronics
- Production
- Defense and Security
- Materials and Components – MATERIALS
The Fraunhofer Alliances facilitate customer access to the services and research results of the Fraunhofer-Gesellschaft. Common points of contact for groups of institutes active in related fields provide expert advice on complex issues and coordinate the development of appropriate solutions.
Growth in inventions and patents
2013 – 2018

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active patent families at year end*</td>
<td>6407</td>
<td>6625</td>
<td>6573</td>
<td>6762</td>
<td>6695</td>
<td>6874</td>
</tr>
<tr>
<td>Invention disclosures reports per year</td>
<td>733</td>
<td>736</td>
<td>670</td>
<td>798</td>
<td>756</td>
<td>734</td>
</tr>
<tr>
<td>Patent applications per year</td>
<td>603</td>
<td>563</td>
<td>506</td>
<td>608</td>
<td>602</td>
<td>612</td>
</tr>
<tr>
<td>Brands (New registrations)</td>
<td>55</td>
<td>55</td>
<td>56</td>
<td>48</td>
<td>42</td>
<td>47</td>
</tr>
</tbody>
</table>

* Portfolio of active rights (patents and utility models) and patent applications at year end.

2017: Fraunhofer
⇒ 17th place of the most active patent applicants and
⇒ 8th place among the most active trademark applicants at the DPMA

2018: Fraunhofer is one of the 100 largest applicants at the European Patent Office (rank 44)

2018: According to a study by the international group Clarivate Analytics, Fraunhofer is one of the »Top 100 Global Innovators«.
(3 other German companies: BASF, Bayer, Merck)
Many ways to get your start at Fraunhofer Germany

- Internship or as student assistant
- Bachelor, master, graduate, PhD and postdoctoral placements
- Direct placement as scientist or manager

→ important: (speculative) applications direct to the specific institute

Fraunhofer Institutes

→ Current job offers at www.fraunhofer.de/career
»Attract« fosters external junior scientists to establish innovative new business segments inside Fraunhofer

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Acquisition of excellent basic scientists for application-oriented, industry-related research and development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Group</td>
<td>Junior Scientists and Postdoctorates with or without a professorship</td>
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</tbody>
</table>
| Components | Annual meeting  
| | Milestone talk (after 3 years)  
| | Financing mix: 50% / 50%  
| | Subsidy amount max. € 2.5 million  
| | Individual development consultation |
| Scope | Duration: max. 5 years (3 + 2)  
| | 23 Team-Leaders |

Website Fraunhofer Attract
**Fraunhofer Attract**

- **Excellont scientist (PhD or Professorship)** + **Creative research idea** + **Suitable Fraunhofer-Institute** = **Mutual Application**

**Interested in industry-related research, career and leadership**

**With potential for application-oriented development**

**Research idea fits perfectly to the research and development portfolio of the selected institute**

**In case of success:** €2.5 million funding for 5 years
»TALENTA« fosters the career development of three target groups of female scientists and female executives

<table>
<thead>
<tr>
<th>Purpose</th>
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<tbody>
<tr>
<td>Increase the proportion of female scientists and executives</td>
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<table>
<thead>
<tr>
<th>Target group</th>
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<tbody>
<tr>
<td>Female scientists in three career stages:</td>
<td></td>
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<tr>
<td>start: young professionals</td>
<td></td>
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<tr>
<td>speed up: initial leadership experience</td>
<td></td>
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<tr>
<td>excellence: well-established executives</td>
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<table>
<thead>
<tr>
<th>Components</th>
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<tr>
<td>Support in terms of time for career-conducive activities</td>
<td></td>
</tr>
<tr>
<td>Financial support for qualification measures</td>
<td></td>
</tr>
<tr>
<td>Networking event</td>
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<table>
<thead>
<tr>
<th>Scope</th>
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<tr>
<td>Duration: 2 years</td>
<td></td>
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<tr>
<td>Max. 70 participants per year:</td>
<td></td>
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<tr>
<td>30 start, 30 speed up, 10 excellence</td>
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More reasons to join Fraunhofer

- Exciting, challenging work in various fields of applied research
- Practical projects
- Close collaboration with scientific, industry, and political circles
- A broad range of interesting training options and mentoring programs
- Work-life balance
- Parent-child offices
- Attractive benefits packages etc.

→ So come and join us 😊 www.fraunhofer.de/career
One of our institutes in Karlsruhe: Fraunhofer Institute of Optronics, System Technologies and Image Exploitation IOSB

www.iosb.fraunhofer.de

- Spectrum of expertise: *From the physics of signal generation* (including the generation, propagation and detection of light) all the way to *humans and machines using the information* contained in these signals – including the design of user-friendly, privacy-respecting and secure assistance systems

- Application contexts e. g.
  - industrial manufacturing
  - automated inspection
  - energy systems, smart city
  - public security and defense

- 15 scientific departments
- 530 employees & 170 student assistants and interns at 5 sites (Karlsruhe, Ettlingen, Ilmenau, Lemgo and Görlitz)

- research foci
  - Artificial intelligence & machine learning
  - Cybersecurity (manufacturing / critical infrastructures)
  - (Industrial) Internet of Things
  - Human-machine interaction
  - Laser sources & converters
  - Machine vision & automated inspection
  - Mobile autonomous systems
  - Optronic sensor systems
  - Semantic image & video analysis
Machine learning for production

We combine sensor technology, secure networking and machine learning to improve plant availability, identify causes for quality problems or robustly regulate and further develop immature processes that are not fully understood.
Autonomous robot systems

From environmental perception to motion planning: We conduct research on machines that act as independently as possible. One example is the competence center ROBDEKON – robots for decontamination in hostile-to-life environments.
Sorting systems for bulk material

Fast sensors, learning evaluation algorithms and compressed air nozzles: With this technology we can sort bulk material according to quality, separate foreign bodies from food or split building rubble into recyclable fractions.
Adaptive serious games

»Lost Earth 2307« conveys study content in a motivating way. Developed initially for aerial photo evaluators, the platform can be adapted to any topic and also serves to investigate new interaction and support mechanisms.
Cyber security

We conduct research for the IT security of industrial production facilities and critical infrastructures (energy and water supply). We develop demonstrators and test environments and organize courses with a strong practical focus in our cyber security training lab.
Laser sources and converters

Many optronic applications make use of specific properties of Laser beams. We develop Laser sources as well as photonic materials and components to optimize these characteristics in the infrared spectral range.
Digital city infrastructures

How can the Internet of Things improve the quality of life in medium-sized cities? The innovation platform Lemgo Digital by Fraunhofer IOSB-INA is a living laboratory where we work with partners to develop solutions for cities and their inhabitants.
Detection of drones

Identify unmanned aerial systems at an early stage, assess potential hazards and provide decision support with regard to possible countermeasures: These are our goals in the MODEAS (modular drone detection and assistance system) and other projects.
70 Years of Fraunhofer, 70 Years of Future - #WHATSNEXT - Video
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