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The captain and his crew: Obituary for Prof. Dr. Wolfgang Karthe

*Employees of Fraunhofer IOF mourn the loss of
former institute director*

Jena (Germany)

As founding director, Wolfgang Karthe laid the foundations for the success of the Fraunhofer Institute for Applied Optics and Precision Engineering IOF. In the midst of German reunification, he succeeded in establishing a renowned research institute that continues to strengthen Jena as a business location to this day. Wolfgang Karthe has now passed away at the age of 86.

"My people were that good. I was sure they could do it." There are not many interviews with Wolfgang Karthe about his early days at Fraunhofer. But the ones that do exist show that Karthe was not a man who played to the gallery. Instead, he always put "his people" in the spotlight, his "crew".

The crew - that's what Karthe called the early staff of Fraunhofer IOF, which was founded in 1992. But every good team needs a captain. And Wolfgang Karthe, who was born in Jena and has now passed away, filled this role with foresight and a skillful hand in science management.

The Institute bids farewell to its founding director and a close friend and valued colleague, who continued to devote himself to his research every day in his office on the Beutenberg for many years after his retirement and who supported the institute in an advisory but never patronizing capacity until the end.

International pioneer for integrated optics and microsystems

Wolfgang Karthe was born in Jena on August 17, 1938. He remained closely connected to the city on the Saale River throughout his life and completed his schooling and academic studies in physics at the Friedrich Schiller University Jena (FSU).

Karthe made a name for himself as a pioneer of integrated optics and microsystems, not only in the former GDR, but also in the international scientific community. The physicist complements his technical expertise with a talent for science management: from 1980, as head of the department, he helped to establish the then newly founded scientific field of "Optics of Small Structures" (OKS) in the physics section at the

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university. In 1981, he accepted the professorship for applied physics at the University of Jena.

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Even then, Karthe's work was application-oriented and international. Among other things, he worked closely with the ZEISS combine and was therefore very familiar with both the GDR's scientific and business communities. When the peaceful revolution reached its climax in Germany in November 1989, Karthe was in China for a guest professorship. He spent the evening when the Wall was opened at home in Germany together with international researchers from Russia, the USA and China.

In the following period, when the cards were reshuffled politically and socially in the course of German reunification, Karthe developed a vision for a new research institute focusing on optics and precision mechanics at the optics location of Jena - in the tradition of Zeiss and Abbe.

He sent the draft to Munich, the headquarters of the Fraunhofer-Gesellschaft. There, his visions fell on fertile ground: Fraunhofer wanted to locate in the new federal states and was considering a Fraunhofer facility in Jena - initially on a trial basis with a planned build-up phase of five years.

The aim was to establish itself in the international scientific community and to meet the economic criteria of a Fraunhofer Institute. In concrete terms, this meant: "You have to raise three quarters of the money for your crew and one quarter has to come from industry," Karthe later recalled.

His "crew" was "hand-picked"

Contrary to Karthe's expectations, Fraunhofer did not offer the management of the new institute to a colleague from the "West" at the time, but to him directly. He knows the industry and, above all, the local people. He knows how people "tick in the East". Karthe later said of Jena as a university location and its intellectual children: "Physics has always trained good people. I made it clear to them that we were going down together or we were going through." The captain was found.

On January 1, 1992, Wolfgang Karthe started work at the Fraunhofer IOF in Jena with around sixty employees. His "crew" was "hand-picked": "Every single one of them was practically brought in from somewhere," he recalls in an interview in 2002 on the occasion of the institute's birthday party. The Fraunhofer IOF, which can now look back on more than 30 years - without Karthe's network, it would have been unimaginable.

The institute began its work in the so-called "Eulenhäuser", a former ZEISS factory building in the center of Jena. From then on, research and work was carried out here in the fields of optical coatings, optical systems, precision mechanical-optical systems and precision engineering. Initially, customers were small and medium-sized companies from the high-tech sector of the 1990s. Karthe's vision was a success. After just three

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years - two years faster than actually expected - the newly founded research facility in Jena met all the criteria and was recognized as a separate institute by the Fraunhofer-Gesellschaft.

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In the following years, the institute established itself not only as a scientific, but also as an economic authority in the region: in 1997, Fraunhofer IOF founded the Microtechnology Application Center under Karthe together with the Institute of Joining Technology and Materials Testing (IfW). In 1998, the first Fraunhofer IOF employees set up their own business and founded mso jena Mikroschichtoptik GmbH as the first Fraunhofer spin-off "made in Jena". Grintech GmbH followed in 2000.

"An outstanding scientist and entrepreneur"

The institute was growing. Also as an employer. Just six years after its foundation in 1998, the space in the Eulenhäuser was no longer sufficient for Karthe and his team. More laboratories and more offices were needed. The decision was made to build the institute's own building on the Beutenberg Campus, the city of Jena's science campus. In 2002, the institute moved into its own building, where it is still located today in the select company of the Max Planck and Leibniz Institutes and other scientific institutions.

One year after moving to the Beutenberg, Wolfgang Karthe retired and handed over the management of Fraunhofer IOF to Andreas Tünnermann, who is still head of the institute today. He gratefully remembers Karthe's support over many years: "I got to know and appreciate Prof. Karthe as an outstanding scientist and entrepreneur. Until recently, we were in close contact on strategic issues relating to the development of the Fraunhofer Institute - his advice gave me guidance for many years."

Many years after his retirement, Karthe still had an office at the institute, which he visited almost every day. He felt particularly close to the Department of Microoptics, his scientific hobbyhorse, well into old age.

A legacy for Fraunhofer, the university and optics

Karthe was a successful networker. Someone who knew how to make - and maintain - contacts. He knew how to use this talent in many ways - also in the interests of the University of Jena, his alma mater: as early as 1990, the Institute of Applied Physics was founded in Jena from the OKS of the University of Jena and the former Technical Center for Coating Technologies and Special Components, which still exists today at the university. Together with Dr. Peter Pertsch and Dr. Andreas Rasch, Karthe was the managing director of the institute at the time.

Karthe also always had an eye on industry: in 1999, he co-founded the Jena-based industry association OptoNet e.V. as one of 18 initiators. Today, 132 leading players from industry, research and education in the field of photonics in the region belong to the photonics network. Karthe exemplified the mission of Fraunhofer - to interlink

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science and industry in an application-oriented manner. His legacy extends far beyond Fraunhofer and into the local university landscape as well as the optics and photonics industry.

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Fraunhofer IOF, which started in 1992 with sixty members, now has around 500 employees. 23% of them have an international background. The institute now plays a leading role in the fields of laser technologies, space and climate research, modern medical technology, information security and digitalization. Karthe and - this would have been important to him - "his crew" paved the way for this.

Wolfgang Karthe died in Jena on March 21, 2025 at the age of 86.

In this time of mourning, the thoughts and sincere condolences of the Fraunhofer IOF staff go out to his family and loved ones.

The Institute will always keep Prof. Dr. Wolfgang Karthe in honorable memory.

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Prof. Dr. Wolfgang Karthe, founding director of Fraunhofer IOF from 1992 to 2003.
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