ABOUT THE INSTITUTE

The Fraunhofer Institute for Technological Trend Analysis INT provides scientifically sound assessments and counseling on the entire spectrum of technological developments. On this basis, the Institute conducts Technology Forecasting, making possible a long-term approach to strategic research planning. Fraunhofer INT constantly applies this competence in projects tailor-made for our clients.

Over and above these skills, we run our own experimental and theoretical research on the effects of ionizing and electromagnetic radiation on electronic components, as well as on radiation detection systems. To this end, INT is equipped with the latest measurement technology. Our main laboratory and large-scale appliances are radiation sources, electromagnetic simulation facilities and detector systems that cannot be found in this combination in any other civilian body in Germany.

For more than 40 years, INT has been a reliable partner for the Federal German Ministry of Defense, which it advises in close cooperation and for which it carries out research in technology analysis and strategic planning as well as radiation effects. INT also successfully advises and conducts research for domestic and international civilian clients: both public bodies and industry, from SMEs to DAX 30 companies.

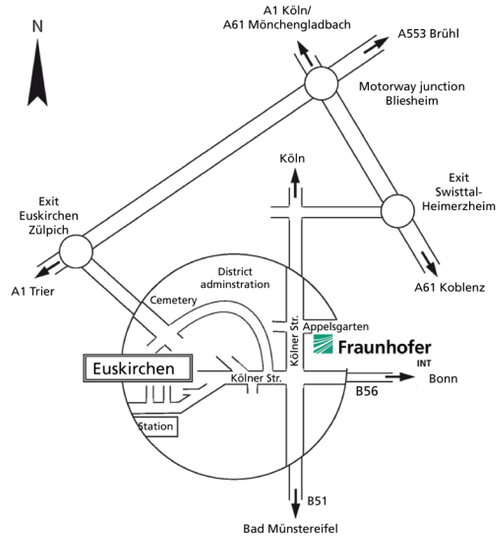
ADDRESS AND CONTACT

Fraunhofer Institute for Technological Trend Analysis
Appelsgarten 2
53879 Euskirchen
Germany

info@int.fraunhofer.de
www.int.fraunhofer.de

Head of Business Unit:

Dr. Jochen Kuhnhenn
Phone +49 2251 18-200
jochen.kuhnhenn@int.fraunhofer.de

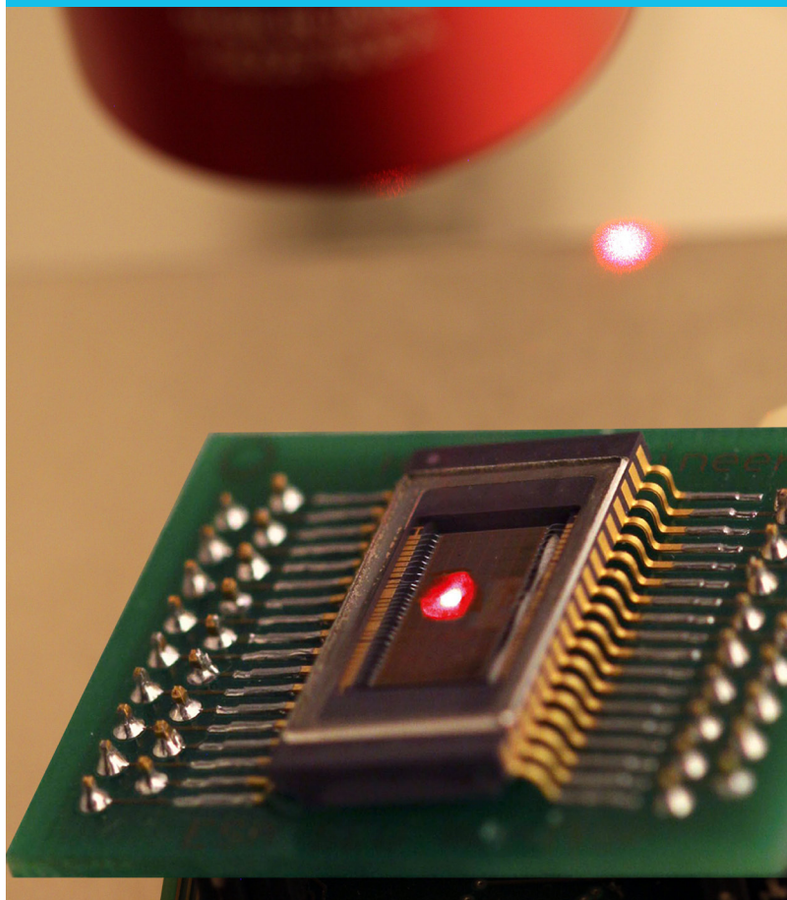


Fraunhofer
INT

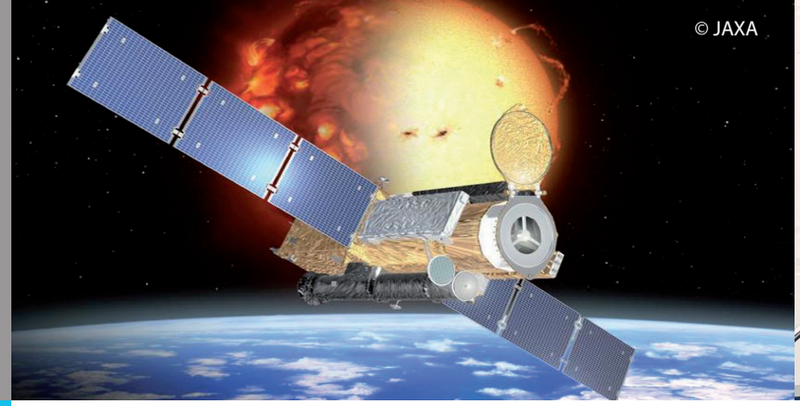
FRAUNHOFER INSTITUTE FOR
TECHNOLOGICAL TREND ANALYSIS

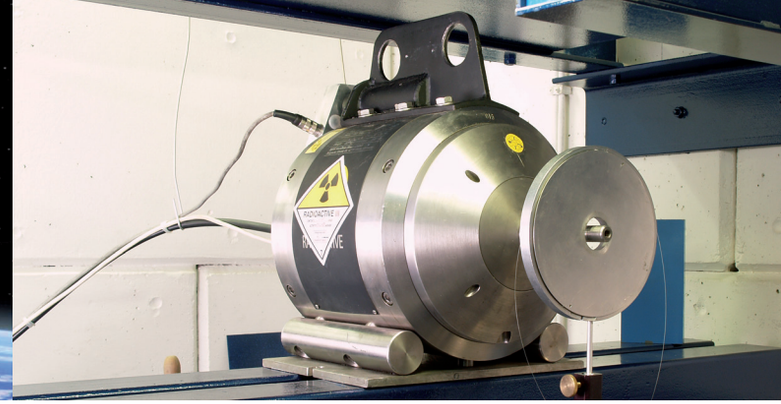
BUSINESS UNIT

NUCLEAR EFFECTS IN ELECTRONICS AND OPTICS



BUSINESS UNIT
NUCLEAR EFFECTS IN ELECTRONICS AND OPTICS





The Business Unit „Nuclear Effects in Electonic and Optics (NEO)“ at Fraunhofer INT investigates the effects of ionizing radiation on electronic, opto-electronic, and photonic components and systems. Its work is based on more than 40 years of experience in that field.

The INT performs irradiation tests based on international standards and advises companies regarding radiation qualification and hardening of components and systems. The knowledge obtained in years of radiation testing is also used for the development of new radiation sensor systems. These activities are performed either at irradiation facilities installed at the INT or at partner institutions to which our scientists have regular access.

A multitude of modern equipment to measure electrical and optical parameters is available. Furthermore our institute runs a precision mechanical workshop and an electronic laboratory. This enables us to conduct most of the irradiation tests without help or equipment of the customer.

PROFILE

- Investigations of the effects in all kinds of radiation environments
- Performance, analysis, and evaluation of irradiation tests done at Fraunhofer INT and external facilities
- Ensuring the operability of components and systems in typical radiation environments, such as space, nuclear facilities, medicine, or accelerators
- Consulting users and manufacturers on the use of products in radiation environments by selecting, optimizing and hardening
- Measurement of the radiation effects on optical fibers and fiber Bragg gratings (FBG)
- Development of radiation sensors based on optical fibers, FBGs, oscillating crystals, UV-EPROMs, and SRAMs
- Participation in the development of international test procedures for IEC, IEEE, NATO, and IAEA
- Since 2013 all services of the business unit are certified according to ISO 9001:2008

IRRADIATION FACILITIES

- Three Co-60 gamma irradiation facilities (point geometry; dose rate: 10 µGy/s to 1 Gy/s)
- One exclusive proton irradiation beam line at the FZ Jülich (maximum energy: 35 MeV)
- Access to high energy heavy ions at the GSI (energy range: 50 to 2000 MeV/u)
- Two neutron generators (Energy: 2.5 and 14 MeV; neutron flux: up to $4x10^{10}$ n/s in 4π)
- One laser for SEE investigations (wavelength: 1064 nm; pulse length: 9ps)
- One x-ray facility (energy: 20 to 450 keV)
- Possibility for high dose irradiations (MGy) and low energy heavy ions (10 MeV/u) at external facilities.