

Erna Scheffler Sponsorship Award

Karlsruhe Soroptimist Club Grants Awards to Electrical Engineer Dr. Petra Thoma and Physicist Ines Reinartz – Ceremony on June 19, 2015 at the Federal Constitutional Court



The award winners Dr. Petra Thoma (left) and Ines Reinartz. (Photos: Private)

The 2015 Erna Scheffler Sponsorship Award goes to electrical engineer Dr. Petra Thoma and Physicist Ines Reinartz of Karlsruhe Institute of Technology (KIT). For the tenth time, the Karlsruhe Soroptimist Club confers this award to young women at KIT for extraordinary scientific achievements. The award is named after the first female judge at the Federal Constitutional Court in Germany, Dr. Erna Scheffler, who was an advocate of equal opportunities of women. Representatives of the media are cordially invited to come to the awards ceremony on Friday, June 19, 17 hrs, at the Federal Constitutional Court.

This year, the award that is granted every two years is split up into a prize in the amount of EUR 4000 for a doctoral thesis and a prize in the amount of EUR 1000 for a master's thesis. The prize for the doctoral thesis goes to Dr. Petra Thoma for her work entitled "Ultrafast $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Direct Detectors for the THz Frequency Range" written at the KIT Department of Electrical Engineering and Information Technology. The thesis describes the development of direct detectors for the terahertz frequency range. These detectors are based on thin layers of the high-temperature superconductor YBCO

Monika Landgraf
Chief Press Officer

Kaiserstraße 12
76131 Karlsruhe, Germany
Phone: +49 721 608-47414
Fax: +49 721 608-43658
E-mail: presse@kit.edu

**For further information,
please contact:**

Margarete Lehné
Press Officer
Phone: +49 721 608-48121
Fax: +49 721 608-43658
E-mail: margarete.lehne@kit.edu

(yttrium-barium-copper oxide) that have a temporal resolution in the picosecond range. These thin layers are embedded in a newly developed ultra-fast reading system. Terahertz radiation is located between infrared and microwave radiation. In this frequency range astrophysicists may obtain important information about the formation of galaxies and stars. Other applications of terahertz radiation are found in medical engineering and safety technology.

Electron storage rings, such as ANKA, the synchrotron radiation source of KIT, represent one of the few high-performance pulsed sources of terahertz radiation. However, the pulses are extremely fast – they are in the range of a few picoseconds (one picosecond corresponds to one trillionth of a second). To record and represent terahertz pulses, ultra-fast detectors are required. Petra Thomas has developed such detectors on the basis of the YBCO high-temperature superconductor. Superconductors are materials that do not have any electric resistance below a certain temperature. This so-called critical temperature is relatively high for high-temperature superconductors – for YBCO, it is about minus 180°C –. Hence, these materials can be cooled with liquid nitrogen, which is comparably inexpensive. YBCO also allows for a high temporal resolution. The minute detectors consist of nanostructured YBCO layers of 30 nanometers in thickness only. Petra Thoma embedded the detectors in a detection system and measured real pulse durations in the terahertz range in ANKA.

The Erna Scheffler Sponsorship Award for a master's thesis is granted to Ines Reinartz for her thesis entitled "Simulation of FRET Dyes with Native Structure-based Models" written at the KIT Department of Physics. So-called Förster resonance energy transfer (FRET) experiments supply valuable information on the dynamics and movements of biomolecules and, hence, about their complex interactions. In FRET experiments regions of biomolecules can be tagged by special dyes, as a result of which their distances can be measured. In addition, computer simulations, as a type of atomic-resolution microscope, provide unique insight into the molecular level of life. In her master's thesis at the KIT Steinbuch Centre for Computing (SCC), Ines Reinartz integrated FRET dyes in the corresponding computer simulations. Interpretation of FRET measurements, thus, is improved by data from simulations. The dynamics and, hence, functions of the biomolecules studied can be determined in far more detail.

For the awards ceremony on Friday, June 19, 17 hrs, at the Federal Constitutional Court in Karlsruhe, the President of the Federal Constitutional Court, Professor Andreas Voßkuhle, took over the auspi-

ces again. A welcome address will be given by Professor Doris König, judge at the Federal Constitutional Court.

Information for Registration: For security reasons, representatives of the media are kindly asked to register in advance by mailing their family name, first name, and date of birth to

presse@bundesverfassungsgericht.de

until Wednesday, June 17, 2015.

Please bring along your identity card for the entry check.

About the Karlsruhe Soroptimist Club

Soroptimist International (SI) is the largest service organization of working women worldwide. SI was founded in Oakland, California/USA, in 1921 and today has about 81000 members and about 3100 clubs in 117 countries all over the world. In Germany, 209 clubs with more than 6400 members exist. Soroptimists are committed to improving the legal, social, and professional status of women. The name comes from the Latin “sorores ad optimum” and means “sisters wishing the best.” The Karlsruhe Club was established in 1963. The founding president was Dr. Erna Scheffler. Today, the club has about 40 members working in different professions.

Karlsruhe Institute of Technology (KIT) is a public corporation pursuing the tasks of a Baden-Wuerttemberg state university and of a national research center of the Helmholtz Association. The KIT mission combines the three core tasks of research, higher education, and innovation. With about 9,400 employees and 24,500 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.

Since 2010, the KIT has been certified as a family-friendly university.

This press release is available on the internet at www.kit.edu.

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