

Juergen Czarske of TU Dresden received 2019 OSA Joseph Fraunhofer Award/Robert M Burley Prize for Optical Engineering in Washington D.C.



Bill Phillips and Juergen Czarske at FiO+LS

On 16 September 2019, The Optical Society (OSA) honored Prof. Czarske of TU Dresden, Germany with the Joseph Fraunhofer Award/Robert M Burley Prize. The award ceremony was accomplished during the OSA/APS Conference “Frontiers in Optics and Laser Science (FiO+LS)” in Marriott Wardman Park and Carnegie Institution of Science, Washington D.C., USA. Renowned scientists participated in the conference, including two Nobel Prize winners, Prof. Donna Strickland (Nobel prize in Physics 2018) from the University of Waterloo, Canada and Prof. William D (Bill) Phillips (Nobel prize in Physics 1997) from the National Institute of Standards and Technology (NIST), USA.

In the laudation the innovations of Prof. Czarske in optical engineering and computational metrology were highlighted by the chair of the selection committee Prof. Yoshio Hayasaki, Utsunomiya University, Japan. Prof. Hayasaki emphasized the outstanding work in theory, experimentation and market launch of a developed product. Particularly impressive is the wide range of applications from production technology, process engineering, environmental protection and energy saving to biomedicine. He presented the certificate and Fraunhofer medal to Prof. Czarske, who accepted on behalf of the entire team. “Czarske’s achievements in optical engineering have led to significant innovation across several fields, including important biomedical applications,” said 2019 OSA President Ursula Gibson. “The Fraunhofer Award/Burley Prize is an appropriate recognition for his path-breaking scientific contributions.” Prof. Czarske is extremely pleased about the recognition of his scientific work: “It is a great honor and a confirmation of the path we have taken *for the entire team*. Given the previous winners, it is also an obligation for future research.”



The Silver Fraunhofer Medal of OSA

For 30+ years, Prof. Czarske has made pioneering innovations in metrology. These include paradigm shifts in computer-aided metrology, which are important for technical processes and biomedicine, for example see https://www.osa.org/en-us/about_osa/newsroom/news_releases/2019/fio_tiny_lensless_endoscope/.

His findings enable to study neurodegenerative diseases and to better understand how the brain works on the basis of optogenetics with human-induced pluripotent stem cell-derived neural networks. Contactless feeling with light towards cancer diagnosis, digital real-time holography for imaging inside of tissue, needle-size lensless fiber endoscopy for keyhole access and aberration-corrected adaptive lens-based smart microscopy for studies in zebrafish are other important topics of his research. His scientific contributions find applications in physical layer security of fiber-based internet, production metrology (industry 4.0), noise reduction of aircrafts, low-emission combustion and lightweight materials for aerospace (green photonics). Paradigm shifts were shown for digital interferometry better than the diffraction limit, which was applied in process technology, where now energy savings potentials can be better understood, for example at flow processes in fuel cells.



2019 OSA President Ursula Gibson and Juergen Czarske

Prof. Czarske studied physics and electrical engineering at the Leibniz University of Hannover. He was supported with a scholarship from Siemens AG in Munich and has worked also at this company. After receiving the Ph.D. degree in engineering and applied physics he was based at Laser Center Hannover (LZH) for 9 years. He also has conducted short-term scientific missions at Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig, at NTT in Japan and several institutions in the USA. Since 2004 he is full professor at the TU Dresden, heads the Department of Measurement and Sensor System Technology at the Faculty of Electrical and Computer Engineering. He is Fellow of OSA, EOS, SPIE and IEEE senior member. Prof. Czarske is an elected member of Saxon Academy of Sciences, Scientific Society for Laser Technology, board of German Society of Applied Optics (DGaO) and board of German Association for Laser Anemometry (Gala), Czarske has received the Berthold Leibinger Innovation Prize, the Reinhart Koselleck Project of German Research Foundation, the Measurement Technique Award of AHMT (Association of University Professors of Metrology), and many other honors. He has published about 200 journal articles, has over 20 patents and has delivered over 100 invited lectures.

First presented in 1982, the Joseph Fraunhofer Award recognizes significant research accomplishments in the field of optical engineering. The prize was added in 1992 in memory of Robert M. Burley, who exemplified many of the highest attributes of the optical engineer and was the first recipient of the award. The award and prize are endowed by the Baird Corporation, the Burley Family and Prof. Shin-Tson Wu. The Joseph Fraunhofer Award/Robert M Burley Prize is generally considered as one of the most important honors in optical engineering.

About OSA

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