

Quote

“Experience is more important than knowledge and imagination, because experience drives both.”

Personal profile on the new TU/e research website

Shihab Al-Daffaie

Assistant Professor, Electrical Engineering, Center for Terahertz Science and Technology Eindhoven

Quote

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Research profile

(Description of research experience, subjects, goals and ambitions, 150-200 words)

Shihab Al-Daffaie is Assistant Professor for Terahertz Nanophotonics and Integration Technology (TNIT) in the Department of Electrical Engineering at Eindhoven University of Technology (TU/e). He is working on the first THz-photonic integrated circuits (PIC). His goal is integrate all lasers and photonic devices (active and passive) with THz nanodevices in one single chip. These THz PIC chips would have applications in communications (including 6G and beyond), bio-medical applications (including virus detection), security and safety (including explosive detection and body search scanners), industrial inspections (including quality degradation), and much more.

Al-Daffaie has participated in several German and European research framework projects in terahertz and nanophotonic technologies and their applications. The main concept that ties his research together is the use of nanophotonic materials and technology in the field of terahertz devices and systems. Al-Daffaie is interested in the full scope of this research: from theory and device design, to fabrication, characterization, optimization, and finally system integration. His recent research presented new types of terahertz nanodevices based on nanoelectrodes (nanowires and graphene) which significantly enhance the terahertz output power and the operation frequency.

Academic Background

(Concise resume, ca. 120 words)

Shihab Al-Daffaie obtained his PhD degree from the Department of Electrical Engineering and Information Technology at the Technical University (TU) Darmstadt (Germany) in 2015. In 2016, he founded and led the Nanophotonics and Terahertz Technology group (NTT) in the faculty of Photonics and Optical Communications at the same university. In 2019, Al-Daffaie joined the team of Terahertz Photonic Systems in the Electrical Engineering at Eindhoven University of Technology (TU/e). In 2022, he became Assistant Professor for Terahertz Nanophotonics and Integration Technology (TNIT) in the Department of Electrical Engineering at TU/e.

Scholarships

•2010 Scholarship from Deutscher Akademischer Austauschdienst (DAAD)

•2019 Ernst Ludwig Mobility Grant

Grants and projects

(please present max three)

•TU/e-EHCI: Advanced graphene-photoconductive material for highly sensitive THz devices (AGPho-MaTHz)

•TU/e- Zwaartekracht (ZK-ECO/PSN): Integrated Broadband Terahertz Time-domain Spectroscopy (IBTHz-TDS)

•NOW-OTP: Nanophotonic Metasurfaces for Optical Wireless Communication (Nano-WiCom)