

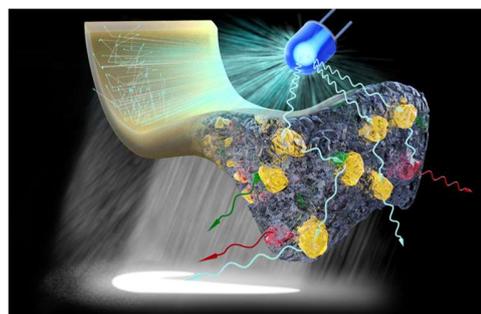
PhD positions on “Free-Form Scattering Optics”

Your profile

We look for candidates that have been trained as physicist or engineer. Expertise in optics is advisable, and know-how of light scattering is a bonus. The candidates will contribute excellent experimental skills to the team that will be complemented with strong theory skills. We expect candidates to be proficient in English and to have good professional communication and team working skills, and to enjoy interdisciplinary collaborations with scientists from high-tech industry.

Program Overview

The research program “*Free-form Scattering Optics*” enables high-tech optical devices that contribute to energy efficacy, climate change, internet-of-things, food and water quality and quantity, and security, in the interest of rendering the unstoppable worldwide urbanization sustainable. Currently, high-tech industry is developing a surge of novel devices that combine light scattering with free-formed optics, such as LED lighting, miniaturized satellites, metrology equipment for semiconductor industry and optically secured bank cards. Due to a lack of fundamental know-how on the combination of the technologies, the devices are being designed by educated guesses, which limits progress and applications. *Free-form scattering optics* will unite traditionally distinct technologies with a hierarchy of length scales ranging from the microscopic (nanometers) to the macroscopic (centimeters). We develop insights, design rules, and new architectures for free-form scattering optics that allow to create breakthroughs in several domains as described above simultaneously. The program directly taps into the strengths of high-tech industry, enhances the knowledge infrastructure, develops new networks of expertise, and educates a new generation of highly skilled professionals.



Artist impression of free-form scattering optics: a light distribution from a source (top, blue) is transferred as efficiently as possible to a desired distribution on a target plane (bottom). The illumination system (white curvy object) combines both free shape and light scattering, and light conversion by internal phosphor particles (yellow and red).

Projects

In Twente, several projects for PhD students will be running, notably: Scattering in the industrial regime; Scattering and conversion; Scattering with free forms; Directing shaped waves through samples that display both absorption and light conversion; and Controlled speckle.

Supervisors and host groups

Your research will be performed within the Complex Photonic Systems (COPS) chair in the MESA+ Institute for Nanotechnology, and in part within the Biomedical Photonic Imaging (BMPI) chair in the MIRA Institute for Biomedical Technology and Technical Medicine. Supervisors include Profs. Willem Vos, Pepijn Pinkse, and Ad Lagendijk (COPS) and Dr. Ivo Vellekoop (BMPI).

Our Offer:

- an excellent and dynamic environment for researchers within our extraordinary research institute MESA+ (www.utwente.nl/mesa/), an attractive campus and lots of facilities for sports and leisure;
- You will be appointed for 4 years as a PhD researcher
- The terms of employment are in accordance with the Dutch Collective Labour Agreement for Universities (CAO), and include:
- a salary ranging from €2325,- gross per month in the first year to €2972,- gross per month in the 4th and final year of your PhD appointment;
- a holiday allowance of 8% of the gross annual salary and a year-end bonus of 8.3%;
- a solid pension scheme.