

## EDS Lecture

### IEEE -EDS Chapter in New South Wales

Friday 28 October, 10:00 am – 11:00 am (Sydney time)

Virtual Lecture via MS Teams

Please register at <https://events.vtools.ieee.org/m/326899>

Registered attendees will be sent a weblink via email the day prior to the webinar.

#### PL IMAGING – APPLICATIONS ACROSS THE PV VALUE CHAIN

**Abstract:** Photoluminescence (PL) imaging on crystalline silicon wafers and solar cells was proposed and first demonstrated experimentally at UNSW around 2005. Since then, this measurement principle was rapidly adopted globally as a fast, versatile and highly efficient research and development tool for photovoltaic devices. A wide range of quantitative analysis methods that rely on PL imaging are used today for the characterisation of silicon ingots, wafers, and for partially and fully processed solar cells in R&D and in high volume production on a daily basis.

With the expected massive uptake of photovoltaics as a mainstream source of electricity worldwide, but particularly in Australia, quality testing of installed modules in the field will become highly relevant in the near term. Given the wealth of information about material and device defects contained in luminescence images, PL imaging is an ideal candidate for inspection of crystalline silicon PV modules and for O&M of PV power plants.

In this presentation the history of PL imaging will be reviewed, with examples given for applications at different stages of the PV value chain, and with particular emphasis on recently developed innovative methods for the acquisition of high quality PL images in full sunlight, using the sun as the sole excitation source.



**About:** Thorsten Trupke is a Professor at the School for Photovoltaic and Renewable Energy Engineering at UNSW, where he leads a research team of about 15 staff, students and postdoctoral fellows. He is also co-founder and Chief Technical Officer of Sydney based technology company BT imaging.

Thorsten is most well-known for the invention and first demonstration of photoluminescence imaging of silicon samples and devices, a technology now routinely used in PV research and development and in high volume manufacturing worldwide. His achievements and published work have been recognized by numerous international awards, including most recently the highly prestigious 2021 IEEE William R Cherry Award.