HZB Helmholtz Zentrum Berlin

HZB TECHNOLOGY TRANSFER PRIZE 2021

LuQY Pro

Commercializing luminescence analysis to accelerate semiconductor research by QYB Quantum Yield Berlin GmbH

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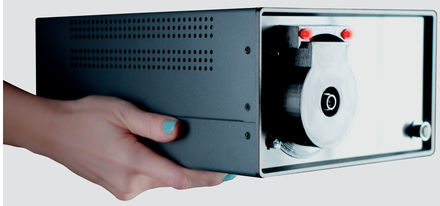

Fig. 1, Author: Andreas Meichsner

THE PRODUCT

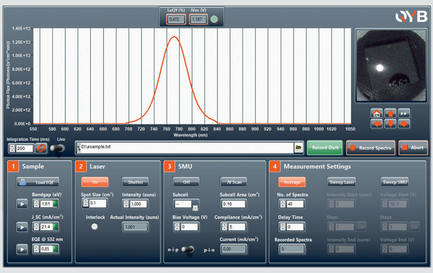

Fig. 2, Author: QYB Quantum Yield Berlin GmbH (Screenshot)

THE SOFTWARE

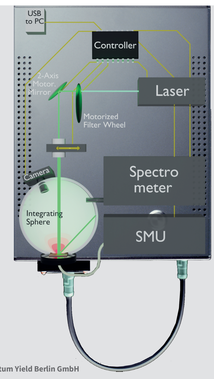

Fig. 3, Author: QYB Quantum Yield Berlin GmbH

THE LAYOUT

Figure 1: The LuQY Pro held in hand to visualize its compact design.

Figure 2: Screenshot of the included measurement Software with integrated data analysis

Figure 3: Schematic layout and components integrated in the LuQY Pro

INNOVATION

- First commercial luminescence analysis setup focused on **solar energy materials** and **light emitting diodes research**
- Full-blown optical setup inside of a **small & portable device** allowing flexible usage in constrained spaces e.g. inert gloveboxes
- Substantially **accelerates** opto-electronic device development **saving time, material and costs.**
- Measures absolute photon fluxes and provides a software that calculates device relevant metrics **(quantum yield & implied voltage) at early stage of fabrication**
- **Allows detailed efficiency potential analysis** from neat absorber layers to full devices
- Prototype system used for developing the 29.1% efficient Si/perovskite tandem world record **(Al-Ashouri et al., Science 2020)**

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The business and market potential

1. Currently available luminescence analysis systems are usually designed for a general material analysis. The LuQY Pro is tailored to the development of opto-electronic devices (solar cells LEDs) and differentiates itself strongly on the market by three distinct **USPs**:
   – Compact & inexpensive, yet extremely powerful and versatile luminescence analysis system
   – Possibility to precisely simulate various operating points of an opto-electronic device (LED or solar cell)
   – System directly analysis the data and predicts device relevant metric (implied Voltage)
2. Several hundred research groups and also solar cell manufactures are currently working only on perovskite solar cells/LEDs (with over 4000 scientific publications only in 2020)
3. After **product launch in July 2021, two devices have been sold** in the first two months – one to an industry and one to an academic customer. The **target for this year** is to **sell four devices** in total yielding a turnover in the six-digit range within only six months. For 2022, we plan to **organically grow these numbers to 10 sold devices** and **expand our product portfolio.**