

HZB TECHNOLOGY TRANSFER PRIZE 2021

Silicon-based multilayer systems, cw laser post-treatment and analysis services for product development

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Photo: Martin Muske

Cluster system consisting of 2 PECVD chambers, 2 high-rate electron beam evaporators, a sputtering and a hydrogen passivation chamber

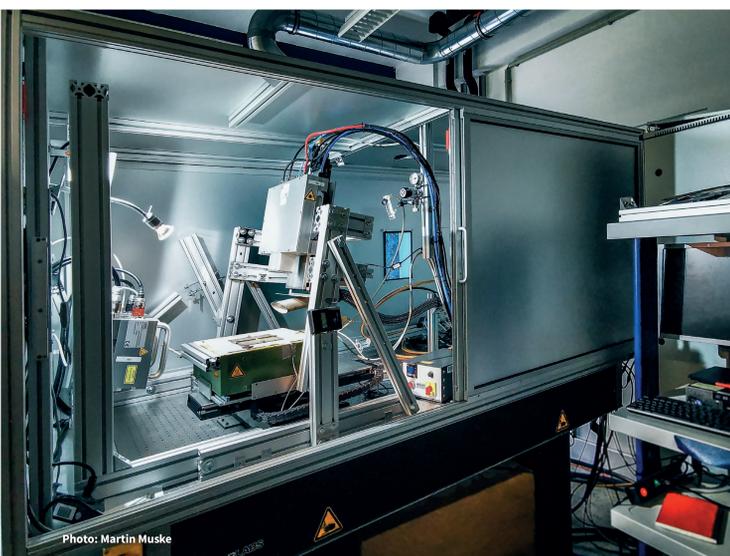


Photo: Martin Muske

Cw-line laser for post-processing and LPC-Si

INNOVATION

Interlayer stack, LPC-Si and laser treatment

HZB has a comprehensive portfolio of analytical and deposition methods. In particular, the unique expertise in the field of liquid phase crystallised silicon (LPC-Si) offers high exploitation potential. The technology developed at HZB is based on high-temperature stable SiO_x , SiN_x , SiO_yN_x layer systems deposited by PECVD. Designed as a modular system, these functional layers can be used for various applications:

Compensating mechanical stresses, ensuring electronic quality or adapting optical properties. With the CW line laser post-treatment, also established at HZB, and in combination with high-rate electron beam deposition of (doped) silicon, a wide range of applications can be realised in the field of photovoltaics, microelectronics or microsystems technology on a variety of substrates.

The layer and coating systems are continuously developed for the industrial partners and optimised for the respective application. This process portfolio was already in request by industrial partners within the framework of the HySPRINT Innovation Lab, so a revenue of 30 k€ could already be generated.

Based on a fast and target-oriented cooperation, LIMO Display GmbH and HZB are currently negotiating another long-term cooperation with a turnover in the 6-digit range.

Due to the possibility of depositing silicon layers up to several 10 micrometres thick, further applications arise. These include applications in the field of microsystems technology, especially in microfluidics for biotechnological applications. To exploit this potential, an already positively evaluated and promising AIF application was submitted to the BMWi 2021 together with several companies (including Coherent/DILAS, MicroDrop Technologies, Plan Optik).

Patents

1. Verfahren zur Herstellung eines Rückseitenkontaktsystems für eine Silizium-Dünnschicht-Solarzelle (102014110262.2)
2. Verfahren zur Herstellung polykristalliner, 3D-Strukturen aufweisender Siliziumschichten homogener Dicke (102013109163.6)
3. Back-contact Si Thin-Film Solar Cell (US 10 074 758 B2)