

## Employment reference

Mr. Saptarshi Abhijeet Chakravorty, born on 21.04.1998, has been working as a student trainee at Materion GmbH since 1 August 2023 and wrote his master's thesis entitled "Automation of a measuring unit for evaluating the selectivity of a new hydrogen sensor." He has been employed as a Test Development Engineer since 1 July 2024.

Materion GmbH is an innovative company in the field of sensor and coating technology in the Hanseatic city of Wismar. Our range of tasks and activities includes the production of thin-film-based optical and MEMS-based hydrogen sensors as well as the refinement of surfaces with functional coating systems. In cooperation with our partners, we also carry out materials science studies to characterise innovative materials and conduct research. Our aim is to provide the industry with a high degree of reliability in process control through our hydrogen sensors. Through our ongoing research activities, we are expanding and optimising our product range and developing new coating systems for special areas of application.

During his time at Materion, Mr Chakravorty was involved in the development of a manufacturing technology to produce MEMS hydrogen sensors as part of the MEMS4H2 research project. His task was to develop an automated calibration setup for testing a large number of sensors simultaneously. This included the procurement of measuring devices with multiplex interfaces, the programming of the test environment using NI LabVIEW and NI TestStand, and the processing of large data sets with Origin Pro and NI DIAdem to determine calibration curves, including statistical error analyses.

In the course of his work, Mr Chakravorty also developed control HMIs for Bronkhorst MFCs and Keithley DAQ6510, and performed automated data analysis using Python, MATLAB, SQL, and LabVIEW. He demonstrated a sound understanding of optical and MEMS sensor testing and worked with several bus systems for instrument communication. His tasks also included the integration of microcontrollers with LabVIEW for environmental monitoring of the test system using sensors, where he developed device drivers in C.

The following technical and technological work was part of Mr Chakravorty's remit:

- The contacting of MEMS-based sensors on different standard sockets in a class 6 clean room,
- Calibration of MEMS sensors with piezoresistive bridge resistors,
- Working with technical gases and gas mixtures with hydrogen concentrations between 0 and 100 vol%,
- Design and layout of printed circuit boards for sensor interfacing and power supply using Altium Designer,

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- Use of oscilloscopes, DAQs, optical power meters, and other precision instruments for validation and testing.

Mr Chakravorty has comprehensive and outstanding specialist knowledge, which he used very confidently and successfully to complete his tasks. In addition, he continuously and independently expanded his knowledge base, which he effectively applied in his area of responsibility with great success.

Thanks to his effective working techniques, Mr Chakravorty was able to familiarise himself with all the tasks assigned to him within a very short time. He successfully and sustainably pursued the agreed objectives. His working style was always characterised by very careful planning and a systematic approach. His work results were always of very good quality, even with changing requirements and under very difficult conditions.

Mr Chakravorty has always completed all the tasks assigned to him to our complete satisfaction. His behaviour towards superiors, colleagues, and customers was always excellent.

Unfortunately, we are unable to continue Mr Chakravorty's employment for financial reasons alone. We very much regret this and would welcome it if Mr Chakravorty would remain in contact with us as part of his further professional development. We thank him for his work and wish him all the best for his personal future and continued professional success.

Wismar, 15 June 2025

Materion GmbH



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