

## Abstract

# On the Optimization of a MEMS Device for Chemoresistive Gas Sensors <sup>†</sup>

Andrea Gaiardo <sup>1,2,\*</sup>, Barbara Fabbri <sup>1</sup>, Matteo Valt <sup>1</sup>, Pierluigi Bellutti <sup>2</sup>, Vincenzo Guidi <sup>1</sup>, Michele Crivellari <sup>2</sup> and Alvis Bagolini <sup>2</sup>

<sup>1</sup> Department of Physics and Earth Sciences, University of Ferrara, 44122 Ferrara, Italy; fbbbr@unife.it (B.F.); matteo.valt@unife.it (M.V.); guidi@fe.infn.it (V.G.)

<sup>2</sup> Micro Nano Facility, Bruno Kessler Foundation, 38123 Trento, Italy; bellutti@fbk.eu (P.B.); crivella@fbk.eu (M.C.); bagolini@fbk.eu (A.B.)

\* Correspondence: grndnr@unife.it

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In recent years, research in the gas sensor field has experienced a significant boost [1]. Gas sensors represent crucial elements in gas monitoring systems and olfactory systems for several applications: environmental monitoring, safety and security, quality control of food production, medical diagnosis and so on [2]. From the point of view of the gas sensing design, the substrate plays a fundamental role, because it acts as a heater, mechanical support and transducer of the sensor response. The application of MEMS technology for the fabrication of a silicon device with very low power consumption has offered new opportunities for innovative gas sensor design. In this work, we studied different approaches in order to realize an adapt silicon microheaters for chemiresistive gas sensors, available for high operating temperatures (650 °C) through MEMS technology. In order to assess a reliable microdevice for this application field, in this work, we studied the different processing steps required to obtain a silicon microheater: layout of the device, types of metals used as a heater and interdigitated contacts, type of insulator and heat treatment to be adopted during the microfabrication. Finally, we propose the processing that provided the best results.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

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