Henri Jansen - DTU Orbit (09/11/2017)

Henri Jansen

Research areas
Applied physics and engineering in general. Present research covers plasma etching and physics, accurate nanofabrication, design and fabrication of 3 dimensional (3D) nanodevices, nanoperforated membranes, Knudsen transport, clean water and sustainability, energy harvesting, black silicon for super-hydrophobicity and solar heat conversion, and X-ray and gravitational sensors for space applications. Previous research covers Communication, Radar and Sonar technology, MEMS fabrication, RF MEMS, micropropulsion for deep space, theory and application of microfluidics, capillary action, cell trapping, microscopic gas transport, hydrogen separation, edge and corner lithography and fractal fabrication.

Organisations

Professor, DTU Danchip
10/03/2015 → present
henrija@dtu.dk

Publications:

Microfabrication of gratings for X-ray Imaging

General information
State: Published
Organisations: DTU Danchip, Department of Micro- and Nanotechnology, Silicon Microtechnology, Department of Physics, Neutrons and X-rays for Materials Physics, Technical University of Denmark
Authors: Silvestre, C. (Intern), Christiansen, E. D. (Ekstern), Zeng, Y. (Ekstern), Kehres, J. (Intern), Jansen, H. (Intern), Hansen, O. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences
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Publication: Research - peer-review › Poster – Annual report year: 2017

Microfabrication of X-Ray grating for Talbot Interferometry

General information
State: Published
Organisations: DTU Danchip, Department of Micro- and Nanotechnology, Silicon Microtechnology
Authors: Silvestre, C. (Intern), Chang, B. (Intern), Jansen, H. (Intern), Hansen, O. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences
X-ray gratings, Dry etching, Talbot interferometer
Electronic versions: Untitled_2.pdf
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2017

Design and fabrication of in-plane AFM probes with sharp silicon nitride tips based on refilling of anisotropically etched silicon moulds

In this paper a micromachining method for batch fabrication of in-plane atomic force microscope (AFM) probes that consist of a sharp silicon nitride tip on a monocrystalline silicon cantilever is presented. The tips are realized by conformal deposition of silicon nitride inside an anisotropically etched cavity inside a silicon wafer. The best measured radius of the sharp tips was 8 nm. Our fabrication method is fully compatible with silicon-on-insulator (SOI) micromachining, allowing a straightforward monolithic integration of the AFM probes with high-aspect-ratio monocrystalline silicon MEMS. The fabrication method allows for lateral cantilevers, which oscillate in the plane of the fabrication wafer. This allows for simple integration of micromechanical transducers, opening the way towards dedicated probes for high speed AFMs. To demonstrate the innovation potential of this method, three different probe designs were fabricated: a plane passive AFM probe, a probe with integrated electrostatic actuator, and a probe which allows scanning on vertical sidewalls. The passive
probes were successfully tested in a commercial AFM set-up. Correct operation of the probes with integrated actuator was demonstrated by actuation under a laser vibrometer.

**General information**

**State:** Published  
**Organisations:** University of Twente  
**Authors:** Geerlings, J. (Ekstern), Sarajlic, E. (Ekstern), Berenschot, J. W. (Ekstern), Siekman, M. H. (Ekstern), Jansen, H. V. (Intern), Abelmann, L. (Ekstern), Tas, N. R. (Ekstern)  
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- Scopus rating (2015): SJR 0.64 SNIP 1.211 CiteScore 1.96  
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- Scopus rating (2014): SJR 0.725 SNIP 1.224 CiteScore 1.84  
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- Web of Science (2012): Indexed yes  
- BFI (2011): BFI-level 1  
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- BFI (2010): BFI-level 1  
- Scopus rating (2010): SJR 1.019 SNIP 1.634  
- Web of Science (2010): Indexed yes  
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- BFI (2008): BFI-level 1  
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- Web of Science (2008): Indexed yes  
- Scopus rating (2007): SJR 1.437 SNIP 1.837  
- Web of Science (2007): Indexed yes  
- Scopus rating (2006): SJR 1.341 SNIP 2.118  
- Web of Science (2006): Indexed yes  
- Scopus rating (2005): SJR 1.28 SNIP 2.116  
- Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.122 SNIP 1.933
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.457 SNIP 1.642
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.983 SNIP 1.439
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.765 SNIP 1.707
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.618 SNIP 1.004
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Projects:

**Smooth advanced silicon NEMS devices**

DTU Danchip
Period: 01/12/2017 → …
Number of participants: 1
Project participant:
Jansen, Henri (Intern)

**Microfabrication Technology for X-ray Optical Elements**

Department of Micro- and Nanotechnology
Period: 01/03/2017 → 29/02/2020
Number of participants: 3
Phd Student:
Silvestre, Chantal (Intern)
Supervisor:
Jansen, Henri (Intern)
Main Supervisor:
Hansen, Ole (Intern)

**Financing sources**
Source: Internal funding (public)
Name of research programme: Samfinansieret - Andet
Project: PhD