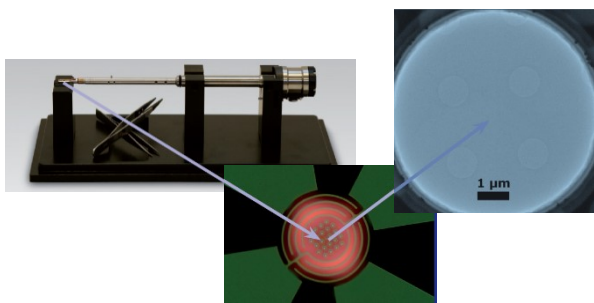


MEMS Solution for ThermoFisher

In situ atomic-resolution imaging at elevated temperatures



Application

Fast and multi-purpose TEM holder FEI's NanoEx-i/v heating holder for in situ experiments uses a small, consumable semiconductor (MEMS) device as the heater. MEMS technology applied to insitu TEM holders brings several benefits mainly due to the small thermal mass of the device: high heating speed and minor thermal drift allow rapid acquisition of images at atomic resolution from the first instants after a temperature step. FEI's NanoEx-i/v solution has eight electrical contacts for simultaneous heating and biasing experiments.

Accurate temperature calibration

One of the key-components of the MEMS device is the quality of heater material which has been engineered to provide high stability and reproducibility during repetitive and cycling experiments for ultimate control over experiment parameters. Each MEMS device is individually calibrated and delivered with its own calibration coefficients.

Electron transparent windows

Electron transparent windows are made of nm thin amorphous silicon nitride. The prime quality of the manufacturing process tailored for this solution guarantees that the windows are free from any carbon contamination or any other particle which may compromise resolution or interfere with the experiment at the nanoscale.

Product specifications

- Single chip calibration
- Operating temperature: >1200 °C
- Atomic scale imaging at all temperatures
- Low drift rates in in situ experiments
- Direct temperature feedback from MEMS device
- Temperature accuracy <4% (with 0.1 °C readout accuracy)
- Temperature stability 3 °C in 1 hr (point-to-point)
- Uniform temperature distribution over heated area
- Optimized for temperature cycling experiments
- ESD compatible
- Simultaneous heating and biasing experiments
- Control software for heating and biasing operation

ThermoFisher SCIENTIFIC

Thermo Fisher Scientific

Thermo Fisher Scientific is the world leader in serving science, with revenues of more than \$20 billion and approximately 70,000 employees globally. Our mission is to enable our customers to make the world healthier, cleaner and safer. We help our customers accelerate life sciences research, solve complex analytical challenges, improve patient diagnostics, deliver medicines to market and increase laboratory productivity. Through our premier brands – Thermo Scientific, Applied Biosystems, Invitrogen, Fisher Scientific and Unity Lab Services – we offer an unmatched combination of innovative technologies, purchasing convenience and comprehensive services.

www.thermofisher.com

Read more on <https://mems.lionix-international.com>

LIONIX INTERNATIONAL

LioniX International

LioniX International is a leading global provider of customized microsystem solutions in scalable production volumes.

We provide customized solutions for OEM's and System Integrators, from design to fully assembled modules, by vertical integration and in scalable production volumes. We maintain our technology leadership secured by a strong IP position.

LioniX International core competences are in Photonic Integrated Circuits (PIC), customized MEMS, and opto-fluidics.

Our chips drive your business

LioniX International

PO Box 456

7500 AL Enschede

The Netherlands

Email: info@lionix-int.com

Phone: +31 53 20 30 053

www.lionix-international.com



www.lionix-international.com