

UC – ENEL49I – Journal Club

# Integrated Membrane-Free Thermal Flow Sensor for Silicon-on-Glass Microfluidics

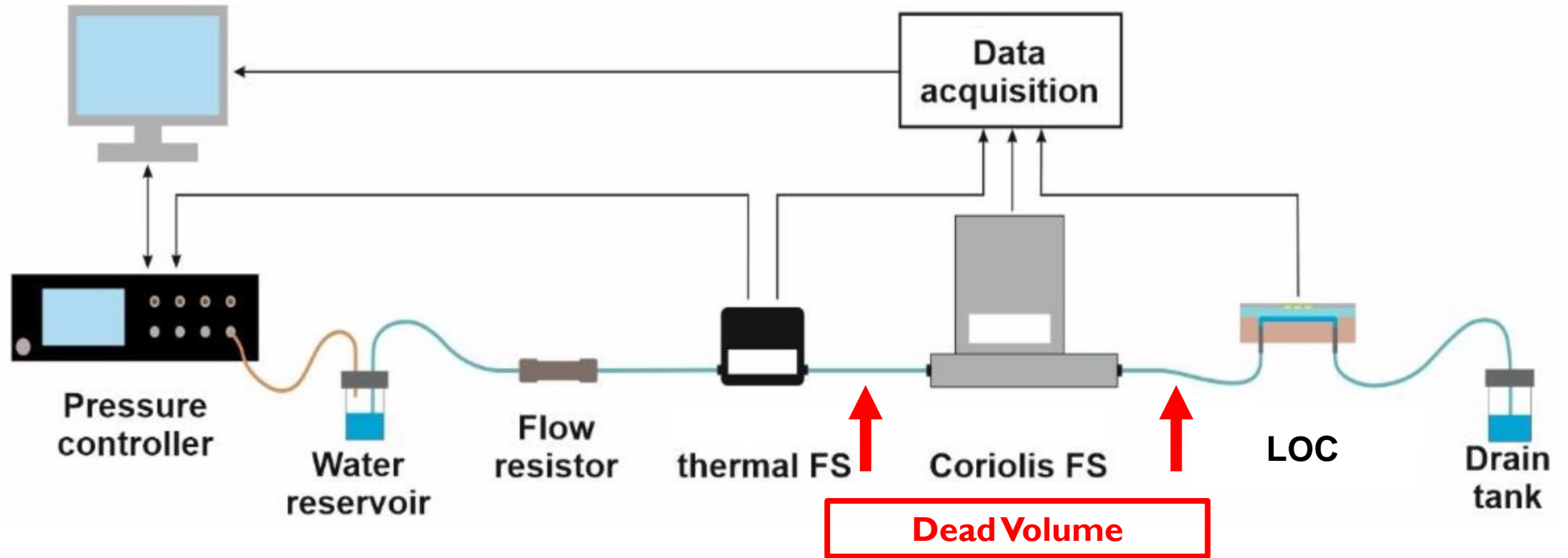
Presented by: Andreas Ming

Paper Authors:

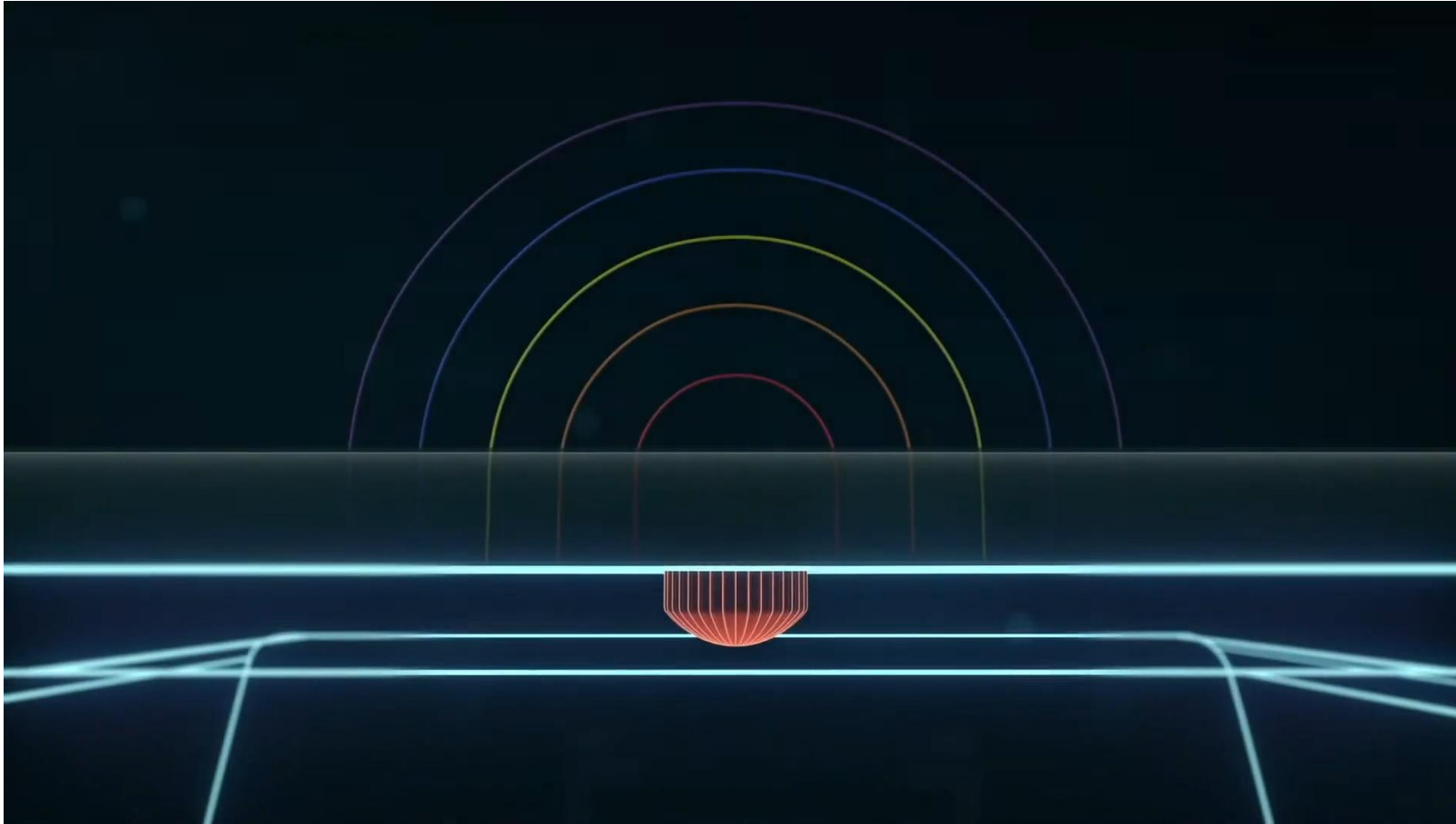
Vitaly V. Ryzhkov, Vladimir V. Echeistov, Aleksandr V. Zverev, Dmitry A. Baklykov, Tatyana Konstantinova, Evgeny S. Lotkov, Pavel G. Ryazantsev, Ruslan Sh. Alibekov, Aleksey K. Kuguk, Andrey R. Aleksandrov, Elisey S. Krasko, Anastasiya A. Barbasheva, Ilya A. Ryzhikova, Ilya A. Rodionov

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# Motivation

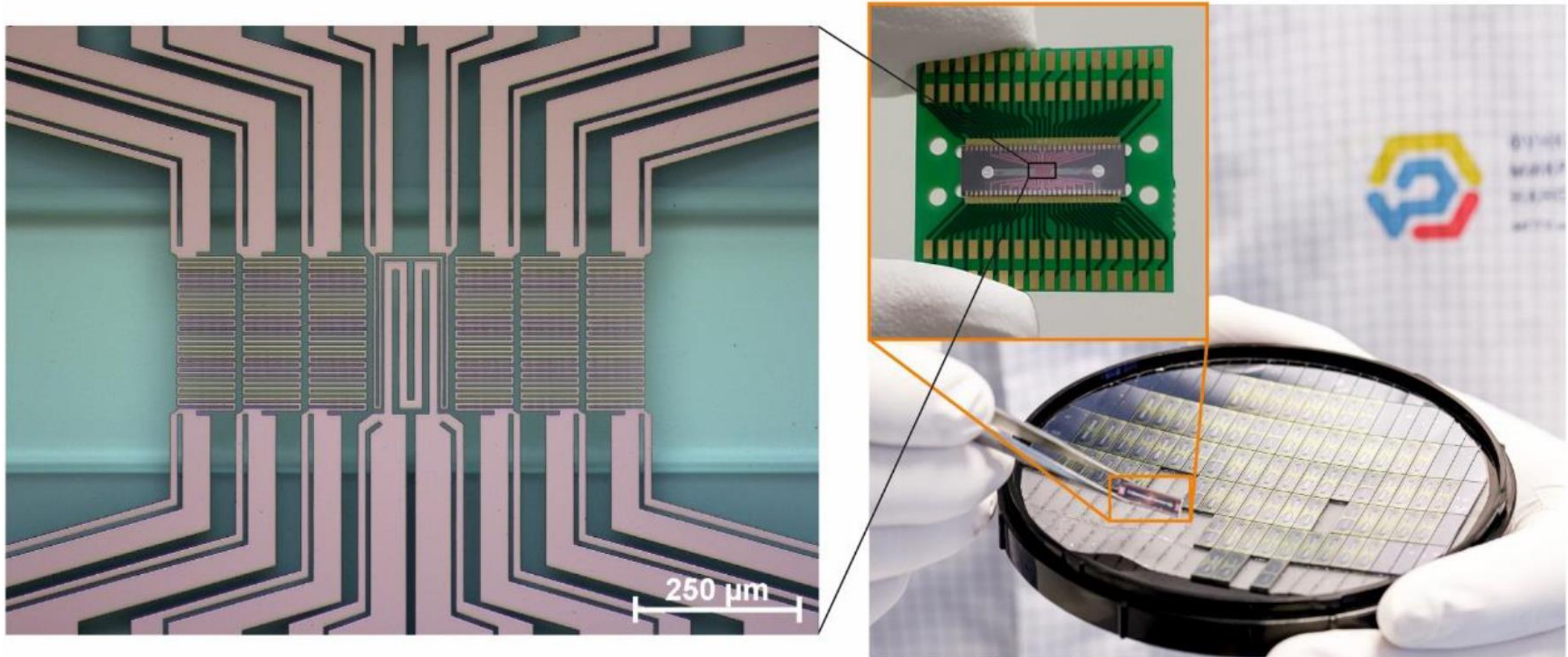


# Thermal Flow Sensor      Working Principle



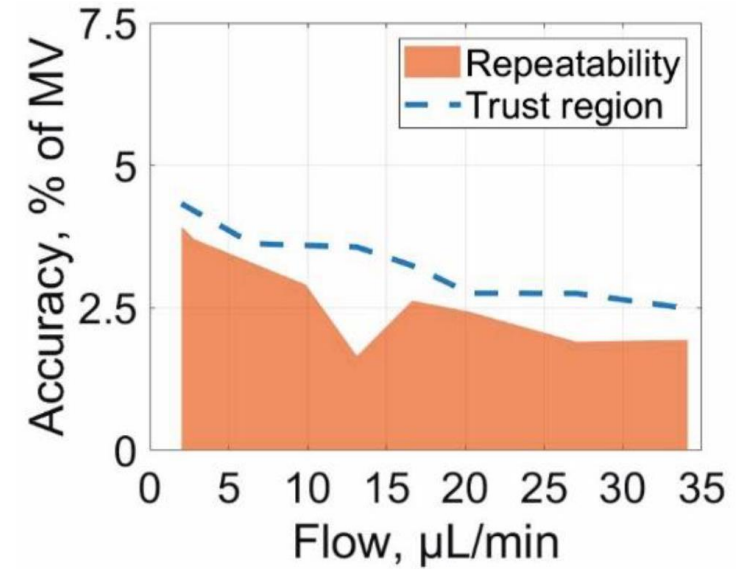
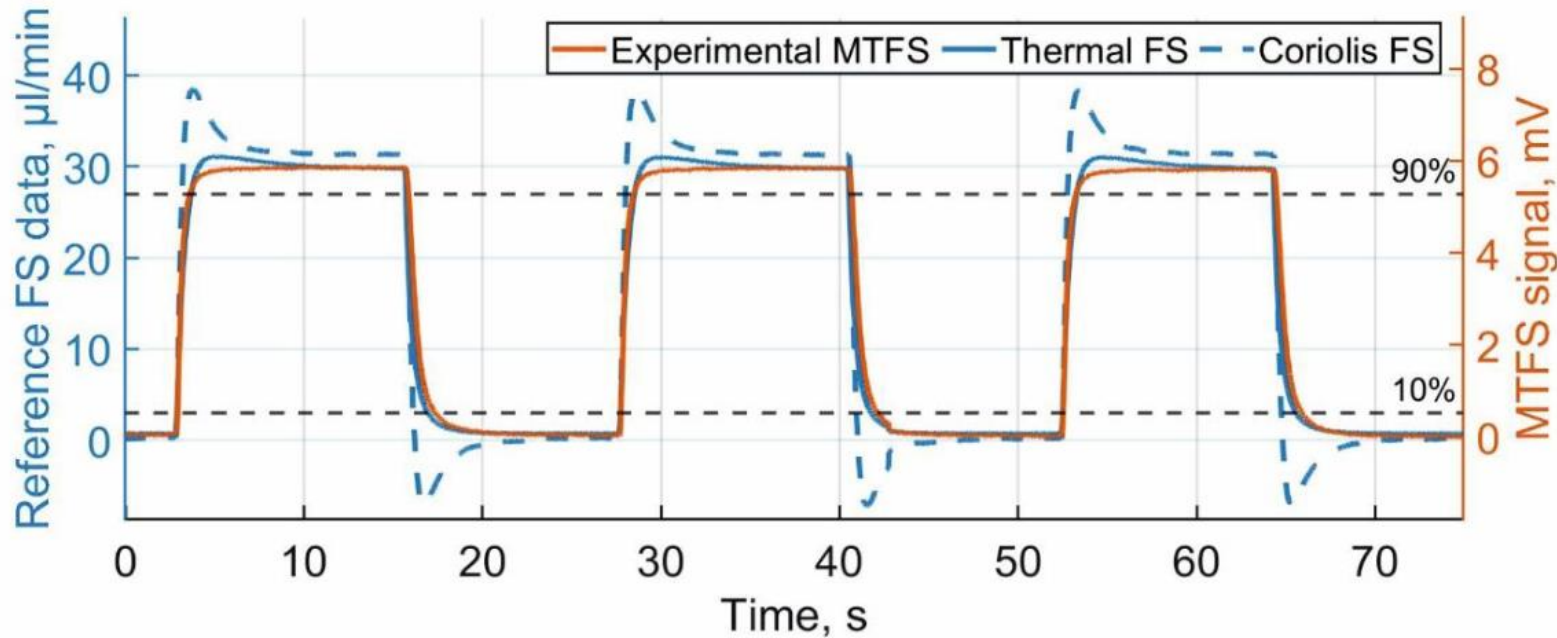
Sensirion Gas Flow Sensors, (Jul. 09, 2021). Accessed: May 09, 2024. [Online Video].  
Available: <https://www.youtube.com/watch?v=Xki3g7nvfQM>

# Thermal Flow Sensor      Fabrication



V.V. Ryzhkov *et al.*, “Integrated membrane-free thermal flow sensor for silicon-on-glass microfluidics.” arXiv, Dec. 21, 2022. doi: [10.48550/arXiv.2212.10916](https://doi.org/10.48550/arXiv.2212.10916).

# Thermal Flow Sensor Measurements



# Summary

- Fully biocompatible chip-integrated thermal flow sensor
- Fabrication within same technology cycle as microfluidic channel
- Error of less than 5% within the range of 2-30  $\mu\text{L min}^{-1}$
- Contribution towards a complete Lab-on-a-Chip