Prof. Dr.-Ing. Thomas MIKOLAJICK

Head of Chair of Nanoelectronics and Scientific Director of NaMLab gGmbH,
17.09.1963

Scientific Career

2009 – today	Chair of Nanoelectronics (formerly: Nanoelectronic Materials)
2009 – today	Scientific Director of NaMLab gGmbH
2006 – 2009	Chair of Electronic and Sensor Materials and head of Institute of Electronic and Sensor Materials at TU Bergakademie Freiberg
1999 – 2006	Positions at Infineon: Integration Manager – Ferroelectric Memories (1999 – 2000); Project Leader: New Memory Technologies (2000 – 2003); Flash Predevelopment (2003 – 2006) and Principal Flash technology (2005 – 2006)
1996 – 1999	Process Engineer at Siemens Semiconductor Regensburg
1995 – 1996	Group Leader: Device and Process Integration at FhG IISB, Erlangen
1996	PhD in Electrical Engineering from Universität Erlangen-Nürnberg
1990 - 1995	Scientific Co-Worker at Universität Erlangen-Nürnberg

Scientific Focus

Materials and Devices for Future Electronics

Selected Scientific Awards

2023	Clarivate highly cited researcher in “cross field”
2023	IEEE Fellow for “Contributions to Nonvolatile Memory”
2022	Clarivate highly cited researcher in “cross field”
2022	Best Paper in Electronics-Award at MOCAST 2022
2021	EDS George Smith Award for the paper entitled: “Demonstration of a p-type Ferroelectric FET with immediate read-after-write capability”
2018	DRC 2018 supervisor of best student paper
2017	ESSDERC best paper award

Active Scientific Activities

Member of the working group “Silicon Germany”
Member of the scientific advisory committee of Silicon Saxony
Member of the scientific advisory board of Leibniz IHP
Member of the scientific advisory board of Forschungsfabrik Mikroelektronik Deutschland (FMD)
Head of GMM working group – Materials for Nonvolatile Memories
Speaker of Center for Advancing Electronics Dresden (cfaed)
Speaker of the BMBF ForLab Consortium
Member of the Scientific committee of VLSI Technology conference
Member of the Scientific committee of NVMTS conference
Member of the Scientific committee of IMW conference

Past Scientific Activities

Member of the DFG Review board Fk-408 Electrical Engineering 2012 - 2020

Speaker of "Cool Silicon" e.V. (from 2010 – 2015 BMBF leading edge cluster) 2010 - 2018
Member of the scientific advisory board of Helmholtz HZDR 2011 - 2018
General chair of ESSDERC conference 2018
Local chair of IMW 2020/2021 (+financial chair)/2022 (+technical chair)
General Chair of IMW 2023
Member of the advisory board of Fraunhofer IPMS 2015 – 2019
Member of the advisory board of Fraunhofer COMEDD/FEP 2013 - 2016

Selected important conference talks and guest editor tasks

Invited for Keynote talk at VLSI-TSA (Taiwan) 2024
Invited for Keynote talk at EDTM 2024
Keynote talk at ISIF/ISAF 2023
Keynote talk at Memrisys 2022
Keynote talk at Device Research Conference (DRC) 2022
Invited talk at IRPS 2021
Invited talk at EDTM 2021
Invited talk at APL Materials Horizons 2021
Invited talk at Infos 2021
Invited educational at ESSDERC 2020
Invited talk at SNW 2020
Invited talk and invited tutorial at IEDM 2019
Invited talks at MRS add e-MRS spring meetings 2019
Invited talk at DRC 2019
Invited talk at Memrysis 2019
Guest Editor of APL special issue "Ferroelectricity in Hafnium Oxide: Materials and Devices" in 2020
Guest Editor of "Neuromorphic Computing and Engineering" focus issue "Hafnium Oxide-Based Neuromorphic Devices" in 2021

Scientific Achievements & Recognitions (based on Google scholar status December 24rd, 2023)

h-index: 89; > 700 publications; > 31000 citations; > 50 patent families
complete list see: https://scholar.google.com/citations?hl=en&user=oO0M3q4AAAAJ&pagesize=80&view_op=list_works

Selected 10 important Publications (citation count based on google scholar Dec 24th, 2023)

[1] J. Mueller, T. Boscke, U. Schroder, S. Mueller, D. Brauhaus, U. Bottger, L. Frey, **T. Mikolajick**, Ferroelectricity in Simple Binary ZrO2 and HfO2, Nano Letters 12, No.8, 4318-4323 (2012); citations: 1449

[2] **T. Mikolajick**, S. Slesazeck, M. H. Park, and U. Schroeder, Ferroelectric hafnium oxide for ferroelectric random-access memories and ferroelectric field-effect transistors, MRS Bulletin 43, No. 5, 340-346 (2018), citations: 250

[3] S. Slesazeck, and **T. Mikolajick**, Nanoscale resistive switching memory devices: a review, Nanotechnology 30, No. 35, 352003 (2019); citations: 184

[4] M. Hoffmann, F. P. G. Fengler, M. Herzig, T, Mittmann, B, Max, U. Schroeder, R. Negrea, P. Lucian, S. Slesazeck, and **T. Mikolajick**, Unveiling the double-well energy landscape in a ferroelectric layer, Nature 565, 464–467 (2019); citations: 339

[5] **T. Mikolajick**, U. Schroeder and S. Slesazeck, The Past, the Present, and the Future of Ferroelectric Memories, IEEE Transactions on Electron Devices, vol. 67, no. 4, 1434-1443 (2020); citations: 255

[6] **T. Mikolajick**, S. Slesazeck, H. Mulaosmanovic, M.H. Park, S. Fichtner, P.D. Lomenzo, M. Hoffmann, U. Schroeder, Next generation ferroelectric materials for semiconductor process integration and their applications, Journal of Applied Physics 129, No. 10, 100901 (2021); citations: 195

[7] U. Schroeder, M. H. Park**, T. Mikolajick**, and C. S. Hwang, The fundamentals and applications of ferroelectric HfO2, Nature Reviews Materials 7, 653–669 (2022); citations: 153

[8] **T. Mikolajick**, M. H. Park, L. Begon-Lours, and S. Slesazeck, From Ferroelectric Material Optimization to Neuromorphic Devices, Advanced Materials (2022); citations: 24

[9] M. Simon, H. Mulaosmanovic, V. Sessi, M. Drescher, N. Bhattacharjee, S. Slesazeck, M. Wiatr, **T. Mikolajick**, and J. Trommer, Three-to-one analog signal modulation with a single back-bias-controlled reconfigurable transistor, Nature Communications 13, 7042 (2022); citations: 9

[10] P. D. Lomenzo, L. Collins, R. Ganser, B. Xu, R. Guido, A. Gruverman, A. Kersch, **T. Mikolajick**, and Uwe Schroeder, Discovery of Nanoscale Electric Field-Induced Phase Transitions in ZrO2, Adv. Functional Materials, 33, 2303636 (2023); citations: 5